
Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review

The Pregnancy and Birth to 24 Months Project

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Nutrition Evidence Systematic Review
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This systematic review was conducted for the Pregnancy and Birth to 24 Months Project (P/B-24 Project) by the Nutrition Evidence Systematic Review (NESR) team at the Center for Nutrition Policy and Promotion, Food and Nutrition Service, USDA. All systematic reviews from the P/B-24 Project are available on the NESR website: <https://nesr.usda.gov>.

Conclusion statements drawn as part of this systematic review describes the state of science related to the specific question examined. Conclusion statements do not draw implications, nor should they be interpreted to be dietary guidance.

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- **P/B-24 Project overview:** Stoody EE, Spahn JM, Casavale KO. The Pregnancy and Birth to 24 Months Project: a series of systematic reviews on diet and health. *Am J Clin Nutr*. 2019;109(7):685S–97S. doi: 10.1093/ajcn/nqy372.
- **P/B-24 systematic review methodology:** Obbagy JE, Spahn JM, Wong YP, Psota TL, Spill MK, Dreibelbis C, et al. Systematic review methodology used in the Pregnancy and Birth to 24 Months Project. *Am J Clin Nutr*. 2019;109(7):698S–704S. doi: 10.1093/ajcn/nqy226
- **Related systematic reviews from the P/B-24 Project:** Raghavan R, Dreibelbis C, Kingshipp BL, Wong YP, Abrams B, Gernand AD, et al. Dietary patterns before and during pregnancy and maternal outcomes: a systematic review. *Am J Clin Nutr*. 2019;109(7):705S–28S. doi: 10.1093/ajcn/nqy216

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INTRODUCTION

This document describes a systematic review conducted to answer the following question: What is the relationship between dietary patterns before and during pregnancy and risk of hypertensive disorders of pregnancy? This systematic review was conducted as part of the Pregnancy and Birth to 24 Months (P/B-24) Project by USDA's Nutrition Evidence Systematic Review (NESR).

The purpose of the P/B-24 Project was to conduct a series of systematic reviews on diet and health for women who are pregnant and for infants and toddlers from birth to 24 months of age. This project was a joint initiative led by USDA and HHS, and USDA's NESR carried out all of the systematic reviews. A Federal Expert Group (FEG), a broadly representative group of Federal researchers and program leaders, also provided input throughout the P/B-24 Project. More information about the P/B-24 Project has been publishedⁱⁱ and is available on the NESR website: <https://nesr.usda.gov/project-specific-overview-pb-24-0>.

NESR, formerly known as the Nutrition Evidence Library (NEL), specializes in conducting food- and nutrition-related systematic reviews using a rigorous, protocol-driven methodology. To conduct each P/B-24 systematic review, NESR's staff worked with a Technical Expert Collaborative (TEC), which is a group of 7–8 leading subject matter experts.

NESR's systematic review methodology involves developing and prioritizing systematic review questions, searching for and selecting studies, extracting and assessing the risk of bias of data from each included study, synthesizing the evidence, developing a conclusion statement, grading the evidence underlying the conclusion statement, and recommending future research. A detailed description of the methodology used in conducting systematic reviews for the P/B-24 Project has been publishedⁱⁱⁱ and is available on the NESR website: <https://nesr.usda.gov/pb-24-project-methodology-0>. In addition, starting on page 81, this document includes details about the methodology as it was applied to the systematic review described herein. An [analytic framework](#) that illustrates the overall scope of the question, including the population, the interventions and/or exposures, comparators, and outcomes of interest, is found on page 81. In addition, the [literature search plan](#) that was used to identify studies included in this systematic review is found on page 82.

ⁱⁱ Stoody EE, Spahn JM, Casavale KO. The Pregnancy and Birth to 24 Months Project: a series of systematic reviews on diet and health. *Am J Clin Nutr*. 2019;109(7):685S–97S. doi: 10.1093/ajcn/nqy372.

ⁱⁱⁱ Obbagy JE, Spahn JM, Wong YP, Psota TL, Spill MK, Dreibelbis C, et al. Systematic review methodology used in the Pregnancy and Birth to 24 Months Project. *Am J Clin Nutr*. 2019;109(7):698S–704S. doi: 10.1093/ajcn/nqy226.

List of abbreviations

Abbreviation	Full name
FEG	Federal Expert Group
HHS	Department of Health and Human Services
NEL	Nutrition Evidence Library
NESR	Nutrition Evidence Systematic Review
P/B-24	Pregnancy and Birth to 24 Months Project
TEC	Technical Expert Collaborative
USDA	United States Department of Agriculture

WHAT IS THE RELATIONSHIP BETWEEN DIETARY PATTERNS BEFORE AND DURING PREGNANCY AND GESTATIONAL AGE- AND SEX-SPECIFIC BIRTH WEIGHT?

PLAIN LANGUAGE SUMMARY

What is the question?

- The question is: What is the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight?

What is the answer to the question?

- No conclusion can be drawn on the association between dietary patterns during pregnancy and birth weight outcomes. Although research is available, the ability to draw a conclusion is restricted by
 - inconsistency in study findings,
 - inadequate adjustment of birth weight for gestational age and sex, and
 - variation in study design, dietary assessment methodology, and adjustment of key confounding factors.
- Insufficient evidence exists to estimate the association between dietary patterns before pregnancy and birth weight outcomes. There are not enough studies available to answer this question.

Why was this question asked?

- This important public health question was identified and prioritized as part of the U.S. Department of Agriculture and Department of Health and Human Services Pregnancy and Birth to 24 Months Project.

How was this question answered?

- A team of Nutrition Evidence Systematic Review staff conducted a systematic review in collaboration with a group of experts called a Technical Expert Collaborative.

What is the population of interest?

- Women who are pregnant or able to become pregnant, ages 15-44 years.

What evidence was found?

- This review includes 21 studies.
- These studies assessed the relationship between dietary patterns before and during pregnancy and birth weight outcomes.
- Only one-third of studies used both gestational age- and sex -specific cut-off values when defining birth weight outcomes.
- Findings were highly inconsistent across this body of evidence.
- Roughly half of studies found no association between dietary patterns and birth weight outcomes.
- Those that did find an association were inconsistent in the direction of effect and dietary patterns measured.
- There are limitations in the evidence as follows: inconsistencies across different

studies in terms of study design, how dietary patterns were assessed and adjustment of key confounders.

- Additional research is needed to assess the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight.

How up-to-date is this review?

- This review includes literature from 01/1980 to 01/2017.

TECHNICAL ABSTRACT

Background

- This systematic review was conducted as part of the U.S. Department of Agriculture and Department of Health and Human Services Pregnancy and Birth to 24 Months Project.
- The goal of this systematic review was to examine the following question: what is the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight.

Conclusion Statement and Grades

- No conclusion can be drawn on the association between dietary patterns during pregnancy and birth weight outcomes. Although research is available, the ability to draw a conclusion is restricted by
 - inconsistency in study findings,
 - inadequate adjustment of birth weight for gestational age and sex, and
 - variation in study design, dietary assessment methodology, and adjustment of key confounding factors.

Grade: Grade not assignable

- Insufficient evidence exists to estimate the association between dietary patterns before pregnancy and birth weight outcomes. There are not enough studies available to answer this question.

Grade: Grade not assignable

Methods

- The systematic review was conducted by a team of staff from the Nutrition Evidence Systematic Review in collaboration with a Technical Expert Collaborative.
- Literature searches were conducted using PubMed, Embase, Cochrane, and other databases to identify studies that evaluated the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight. A manual search was conducted to identify articles that may not have been included in the electronic databases searched. Articles were screened by two authors independently for inclusion based on pre-determined criteria.
- Data from each included article were extracted, risks of bias were assessed, and both were checked for accuracy. The body of evidence was qualitatively synthesized, a conclusion statement was developed, and the strength of the evidence (grade) was assessed using pre-established criteria including evaluation of the internal validity/risk of bias, adequacy, consistency, impact, and generalizability of available evidence.

Summary of Evidence

- This systematic review includes 18 prospective cohort, 1 retrospective cohort and 2 randomized control trials published between 1986 and 2016.
- The studies used multiple approaches to assess dietary patterns:

- Nine studies used an index/score to assess dietary patterns.
- Eight studies used factor/principal component analysis (PCA).
- Two randomized controlled trials assigned subjects to one of two experimental diets.
- One study did not use a formal method to arrive at a dietary pattern.
- One study used both logistic regression and PCA.
- Many studies did not standardize for gestational age and/or infant sex when assessing birth weight.
 - Just one-third of studies (n=7) used both gestational age- and sex - specific cut-off values when defining small for gestational age (SGA), large for gestational age (LGA), appropriate for gestational age (AGA), or intrauterine growth restriction (IUGR).
 - Nine out of 21 studies reported birth weight, alone, without standardizing for gestational age or sex using z-scores.
- Study findings were highly inconsistent across the body of evidence. About half of studies (n=10) found no association between dietary patterns and birth weight outcomes. Among studies that observed an association, there was limited consistency in direction of effect and the dietary patterns generated.
- There are serious limitations to the generalizability of this review. Minority, lower-SES, and adolescent populations are underrepresented in the body of evidence.
- The ability to draw strong conclusions was limited by the following issues:
 - There was a lack of consistency in study findings.
 - The data were primarily observational in nature, making it difficult to determine causal effect of the dietary patterns.
 - Many studies did not adjust birth weight for gestational age and sex, and there was heterogeneity among the standardized measures that were used.
 - The timing of exposure assessment and the duration of recall periods varied across studies.
 - Key confounding factors were not consistently accounted for.
 - None of the studies assessed effect measure modification between dietary patterns and maternal pre-pregnancy BMI in the context of birth weight outcomes.
 - Many studies were conducted outside of the U.S.
 - Adolescent, minority, and lower-SES populations were underrepresented.
- Additional research is needed that should:
 - Include diverse populations from the U.S. and elsewhere with varying age groups (including adolescents) and different racial/ethnic and socioeconomic backgrounds.
 - Assess effect measure modification by pre-pregnancy BMI and gestational weight gain.
 - Use a standardized birth size measure (such as one developed by the INTERGROWTH-21st project) that would enable valid comparisons between and within countries¹.

¹ Westerway, S. C., Papageorgiou, A. T., Hirst, J., Costa, F. D., Hyett, J., & Walker, S. P. (2015). INTERGROWTH-21st - Time to standardise fetal measurement in Australia. *Australas J Ultrasound Med*, 18(3), 91-

- Include well-designed and sufficiently powered RCTs.
- Foster collaborative efforts across different regions and populations so that dietary patterns can be more consistently scored, compared and reproduced across studies.
- Develop and validate novel epidemiological tools that can accurately capture the complexity of dietary habits.
- Promote harmonization of research methods across various cohorts and randomized trials, similar to the National Cancer Institute's Dietary Patterns Methods Project².
- Adjust for key confounding factors in observational studies, including parity, educational attainment, smoking status, race/ethnicity, maternal age, family poverty income ratio, pre-pregnancy BMI, mean total energy intake and gestational weight gain.

95. doi:10.1002/j.2205-0140.2015.tb00206.x

² Liese, A. D., Krebs-Smith, S. M., Subar, A. F., George, S. M., Harmon, B. E., Neuhauser, M. L., . . . Reedy, J. (2015). The Dietary Patterns Methods Project: synthesis of findings across cohorts and relevance to dietary guidance. *J Nutr*, 145(3), 393-402. doi:10.3945/jn.114.205336

FULL REVIEW

Systematic review question

What is the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight?

Conclusion statement

No conclusion can be drawn on the association between dietary patterns during pregnancy and birth weight outcomes. Although research is available, the ability to draw a conclusion is restricted by

- inconsistency in study findings,
- inadequate adjustment of birth weight for gestational age and sex, and
- variation in study design, dietary assessment methodology, and adjustment of key confounding factors.

Grade

Grade not assignable

Conclusion statement

Insufficient evidence exists to estimate the association between dietary patterns before pregnancy and birth weight outcomes. There are not enough studies available to answer this question.

Grade

Grade not assignable

Summary

- This systematic review includes 18 prospective cohort, 1 retrospective cohort and 2 randomized control trials published between 1986 and 2016.
- The studies used multiple approaches to assess dietary patterns:
 - Nine studies used an index/score to assess dietary patterns.
 - Eight studies used factor/principal component analysis (PCA).
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 - One study did not use a formal method to arrive at a dietary pattern.
 - One study used both logistic regression and PCA.
- Many studies did not standardize for gestational age and/or infant sex when assessing birth weight.
 - Just one-third of studies (n=7) used both gestational age- and sex - specific cut-off values when defining small for gestational age (SGA), large for gestational age (LGA), appropriate for gestational age (AGA), or intrauterine growth restriction (IUGR).
 - Nine out of 21 studies reported birth weight, alone, without standardizing for gestational age or sex using z-scores.
- Study findings were highly inconsistent across the body of evidence. About half of studies (n=10) found no association between dietary patterns and birth weight outcomes. Among studies that observed an association, there was

limited consistency in direction of effect and the dietary patterns generated.

- There are serious limitations to the generalizability of this review. Minority, lower-SES, and adolescent populations are underrepresented in the body of evidence.

Description of the evidence

- The search included articles from very high and high Human Development Index (HDI) countries, and the search timeframe spanned between January 1980 and January 2017.
- This evidence review includes 18 prospective cohort studies, 1 retrospective cohort study and 2 RCTs that examined the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight.

As described in

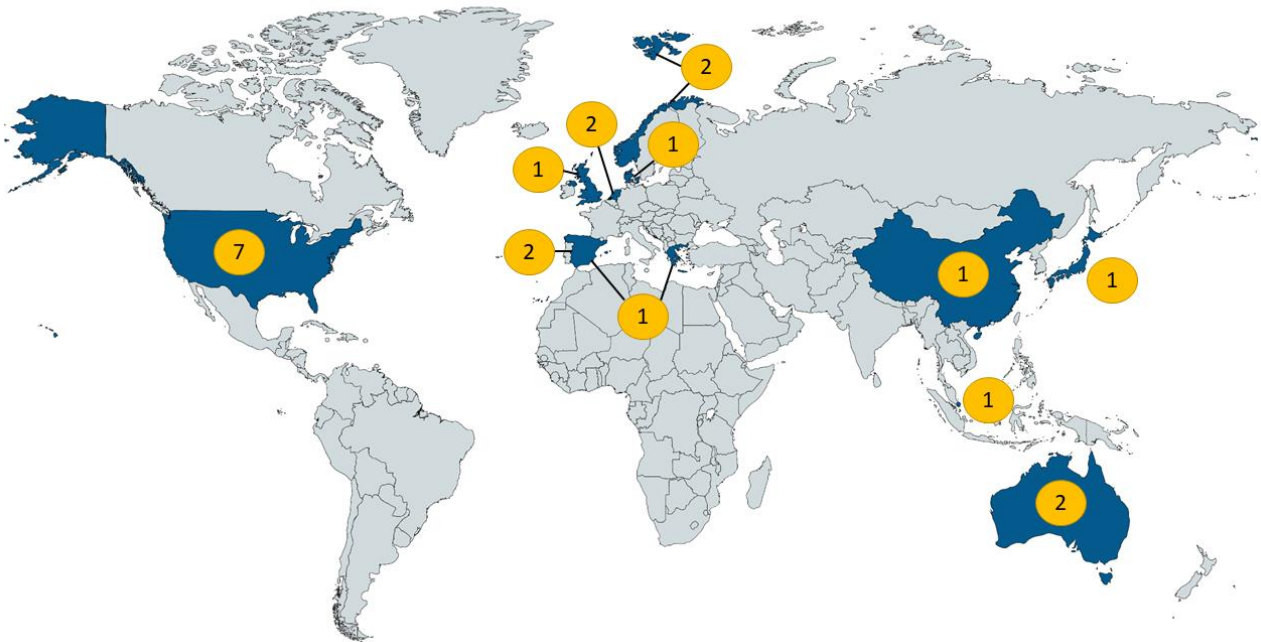
- Table 1: Included trials and cohorts, a variety of cohorts and trials were represented in this body of evidence.

Table 1: Included trials and cohorts

Cohort/Trial Name	Study
1. Cardiovascular Risk Reduction Diet in Pregnancy (CARRDIP) trial	(1)
2. Generation R	(2, 3)
3. Australian Longitudinal Study on Women's Health	(4)
4. Norwegian Mother and Child Cohort (MoBA)	(5)
5. Infant Feeding Practices Study (IFPS II)	(6)
6. INMA (Infancia y medio ambiente) and Rhea study	(7)
7. Valencia birth cohort (a sub-project of the INMA cohort)	(8)
8. Project Viva	(9)
9. Healthy Start Study	(10)
10. Growing up in Singapore Towards Healthy Outcomes Study (GUSTO)	(11)
11. CANDLE Study (Conditions Affecting Neurocognitive Development and Learning in Early Childhood)	(12)
12. Danish National Birth Cohort	(13)

Cohort/Trial Name	Study
13. Born in Guangzhou Cohort Study	(14)
14. Avon Longitudinal Study of Parents and Children	(15)
15. Osaka Maternal and Child Health Study	(16)
16. National Longitudinal Study of Adolescent Health (Add Health)	(17)
17. Unnamed cohort	(18-20)
18. Unnamed trial	(21)

- Seven of the 21 studies were conducted in the U.S (6, 9, 10, 12, 17, 18, 21). In addition, two studies were conducted in Spain (8, 19), one in Spain and Greece (7), two in Netherlands (2, 3), two in Australia (4, 20), two in Norway (1, 5), one in Denmark (13), one in Singapore (11), one in China (14), one in Japan (16) and one in England (15). See the map below.



Subject characteristics:

- Sample size** of the studies ranged from 12 subjects in a pilot study (21) to 66,597 subjects (5). The median sample size was 1,079.
- Age:** Most of the studies included women between 20 and 40 years of age. An exception was the Add Health cohort, which included only adolescent participants (17). Monteagudo et al. reported that their study participants were between ages 21-46 years and the mean age was 31.9 years. Other studies noted that anywhere between 10% and 29% of the study participants were at

least 35 years of age. The percentage of participants over 40 years was not specified, except by Knudsen et al. (1% of participants). The rest of the studies presented the mean age, which ranged from ~27 (12) to ~35 (21).

- **Pregnancy characteristics:** Almost all of the studies included singleton pregnancies, only.
- **Health Characteristics:**
 - One-third of studies excluded subjects with a previous diagnosis of type 1 and/or 2 diabetes mellitus (1, 5, 6, 10, 11, 14, 19). In addition, Shapiro et al. also excluded subjects with gestational diabetes in their index pregnancy.
 - A few studies included mother-baby dyads only if the baby was born within a specific time period:
 - Hillesund et al. included babies born between 37 and 42 weeks.
 - Poon et al. included children born at or after 35 weeks of gestation, but before 43.5 weeks. In addition, Poon et al. specified that only babies who weighed ≥5 lbs and didn't stay in the intensive care unit for more than 3 days were included.
 - Shapiro et al. included all children with a gestational age ≥32 weeks.
 - Knudsen et al. included only full-term infants.
 - Lu et al. excluded preterm deliveries.
 - Okubo et al. included term deliveries born between 37 and 41 weeks of gestation.
 - A few studies excluded subjects with the following chronic diseases:
 - Hypertension (1, 8, 14, 19)
 - Thyroid pathology (19)
 - Asthma with active steroid management (10)
 - Timmermans et al. reported that 6% of their subjects had co-morbidities including chronic hypertension, heart disease, diabetes, high cholesterol, thyroid disease and systemic lupus erythematosus. Similarly, Chatzi noted that <3% of their study participants had gestational hypertension and <1% had diabetes before pregnancy.
 - Khoury et al. excluded women with high risk pregnancies caused by endocrine disease, history of thromboembolic disease or significant gastrointestinal, cardiac, pulmonary, or hematologic disease. Women with complications during a previous pregnancy, including neonatal death, still birth, and preterm delivery, were also excluded. Women who experienced ongoing hyperemesis gravidarum or bleeding after gestational week 12 in the current pregnancy were not included.
 - Okubo et al. reported that ~13% of their subjects had one or more of the following conditions: Hyperemesis, hydramnios, oligoamnios, gestosis, abruptio placenta, placenta previa, incompetent cervical os or others diagnosed by a medical doctor.
 - A few studies also excluded subjects with drug-abuse (1, 3) or serious psychiatric illness (10), or who were receiving psychotropic drugs (11).
 - Four studies excluded subjects whose pregnancies were conceived using assisted reproductive technologies (2, 3, 7, 8).
 - Two studies noted that their study participants were healthy or had a low risk pregnancy (12, 21).

- **Smoking** during pregnancy varied across studies:
 - Daily smoking ranged between ~3% (11) and 32% (20). Lu et al. reported that 30% experienced passive smoking.
 - Khoury et al. excluded current smokers from their study.
 - Pre-pregnancy smoking status (7-13 years prior to becoming pregnant) was reported to be 25% in one study (4).
- **Race/ethnicity:** About half of the studies (n=10) did not report participants' race/ethnicity. Among the studies that did report this information:
 - One-third of studies noted that a majority of their subjects were white (Khoury: 100%; Grieger: 89%; Rodriguez-Bernal: 88%; Poon: 87%; Northstone: 82%; Rifas-Shiman: 72%; Shapiro: 55%). Categorized another way, Xie et al. noted that 77% of the study subjects were non-Blacks. Bouwland-Both et al. conducted their study in an all-Dutch population.
 - Only two studies reported including a majority of non-white subjects:
 - Colon-Ramos noted that 62% of their study participants were African American.
 - The GUSTO study participants (based in Singapore) were Chinese, Malayan or Indian. The authors did not specify the overall percentage of each race/ethnicity.
- **Parity:** There was heterogeneity in terms of study participants' parity. For example, in some studies, most subjects were nulliparous (88% in Lu et al., 90% in Gresham et al. and 100% in Xie et al.). Other studies (n=11) reported that ~38% to 68% of women were nulliparous.
- **Pre-pregnancy BMI:**
 - In this body of evidence, Chia et al. reported one of the lowest mean pre-pregnancy BMIs (which ranged between 22.1 and 22.7 kg/m², depending on the dietary pattern quintile). While Okubo et al. noted that the mean pre-pregnancy BMI was 20.2 kg/m², it was based on maternal body weight measured at 20 years of age.
 - Colon-Ramos reported one of the highest mean pre-pregnancy BMI (~27.6 kg/m²), with the African American sub-group noting even higher mean BMI (28.8 kg/m²). The percentage of participants with BMI over 30 kg/m² ranged from 4% (15) to 19% (10).
 - It should be noted that Khoury et al. excluded subjects with a BMI either <19 or >32 kg/m².
 - While Grieger et al. reported on maternal BMI, it is unclear if it was measured pre-pregnancy.
 - Xie et al. reported that pre-pregnancy BMI in adolescents was 22.2 kg/m².
- **Maternal education:** Among studies that reported maternal education (n=16), participants with more than a high school education ranged from 16% (19) to 91% (9).
- **Socioeconomic status (SES)** was reported in some of the studies (n=14). Data presented across studies were heterogeneous. Below are a few examples of studies that reported data on SES.
 - Kennedy noted that all of their participants were WIC eligible (income <185% of poverty level).
 - Poon noted that 38% had income <185% of poverty level.

- Rifas-Shiman reported that 13% of their participants had income below \$40,000, whereas Shapiro et al. reported that 29% of participants had income below \$40,000.
- Rodriguez-Bernal noted that 61% of their participants were manual workers. Meanwhile, Monteagudo et al. reported that 37% of participants were employed doing housework and 5% did agricultural work.
- Grieger et al. reported that 82% of their participants were in the lowest 2/5th SES strata.
- Xie et al. study participants were adolescents, so they reported parental education status as a proxy for SES, with 79% of parents having at least a high school education.
- Although Colon-Ramos did not report the SES of the study participants, the authors mentioned that the study was conducted in a U.S. county that was primarily low income (<200% poverty level).

Interventions/Exposures:

Dietary patterns were assessed using 1) index/score analysis; 2) factor analysis and PCA; 3) experimental diet; 4) PCA and reduced rank regression; and 5) another unspecified method. A description of the studies included by each method used to measure dietary patterns is included below.

- **Index/score analysis (Table 2: Indices and scores used to assess the relationship between dietary patterns before and during pregnancy and birth weight):** Nine studies included in this review used one or more of the following indices/scores:
 - Mediterranean Diet Scale (7)
 - Australian Recommended Food Score (4)
 - New Nordic Diet score (5)
 - Nutritional Risk Score (18)
 - Mediterranean Diet Score for Pregnancy (19)
 - Alternative Mediterranean Diet (aMED) (6)
 - Alternative Healthy Eating Index for Pregnancy (6, 8, 9)
 - Healthy Eating Index-2010 (10)
- **Factor analysis and PCA (Table 3: Summary of dietary patterns identified using factor or principal components analysis):** Eight studies included in this review assessed dietary patterns using factor analysis or PCA (3, 11-16, 20)
- **Experimental diet:** Two studies included in this review assigned participants to one of two experimental diets (1, 21). Khoury et al. randomly assigned participants to the following diets:
 - Intervention diet:
 - Dietitians encouraged the intake of fatty fish, vegetable oils, especially olive oil and rapeseed oil, nuts, nut butters, margarine based on olive- or rapeseed oil, and avocado to replace meat, butter, cream, and fatty dairy products; the consumption of fresh fruits and vegetables was advised (at least 6 a day); intake of dairy products in the form of skimmed or low-fat products (skimmed milk, fat-reduced cheese, and yogurt) in place of full fat products was encouraged; subjects were advised to choose meat for a main meal twice a week and use legumes, vegetable main

- dishes, fatty fish, or poultry with the fat trimmed off on the other days; coffee was limited to 2 cups of filtered coffee a day
- Compliance data showed that the intervention group included significantly more fish and fish products; fatty fish and fish products; rapeseed-based margarine; oils; olive oil; rapeseed oil; nuts, olives, and seeds; vegetables; and fruits when compared to the control diet³
- Control diet:
 - Subjects were asked to consume their usual diet based on Norwegian foodstuffs, and not to introduce more oils or low-fat meat and dairy products than usual
 - Included significantly more fatty milk, meat and meat products, fatty minced meat, butter, and hard margarines when compared to the intervention diet⁶

In a pilot RCT, Clapp randomly assigned participants to one of two experimental diets:

- Aboriginal carbohydrate diet (Low-GI): used carbohydrates from unprocessed whole grains, fruits, beans, vegetables, and many dairy products; includes most dense whole grain and multigrain breads, bran cereals, pastas, fresh fruits and vegetables, yogurt, ice cream, and nuts
- Cafeteria carbohydrate diet (High-GI): used carbohydrates from highly processed grains, root vegetables, and simple sugars; includes many highly-refined breads, potatoes, instant rice, most breakfast cereals, desserts, and snack-type foods.
- **Logistic Regression and PCA:** One study assessed adherence to a Mediterranean diet using logistic regression and PCA (2).
- **Unspecified method:** One study created dietary patterns by grouping foods into categories defined “on the basis of theoretical expectations” by Dube et al.⁴ and later used by Jeffery et al.⁵ and Agurs-Collins et al⁶ (17). The following three categories were created:
 - High-calorie sweet pattern: includes foods such as doughnuts, ice cream, chocolate candy, regular candy, and cookies
 - High-calorie nonsweet pattern: includes steak, fried chicken, fried fish, pizza, hot dogs, sausage, cheese, whole milk, etc.
 - Low-calorie pattern: includes foods such as low-fat and skim milk, grilled chicken, grilled fish, apples, and breakfast cereal

Time point of exposure:

As described below, the time point of exposure and recall periods were heterogeneous across studies (Table 4: Time point of exposure assessment). The following section

³ Khoury, J., Henriksen, T., Seljeflot, I., Mørkrid, L., Frøslie, K. F., & Tonstad, S. (2007). Effects of an antiatherogenic diet during pregnancy on markers of maternal and fetal endothelial activation and inflammation: the CARRDIP study. *BJOG*, 114(3), 279-288. doi:10.1111/j.1471-0528.2006.01187.x

⁴ Dube, L., LeBel, J. L., & Lu, J. (2005). Affect asymmetry and comfort food consumption. *Physiol Behav*, 86(4), 559-567. doi:10.1016/j.physbeh.2005.08.023

⁵ Jeffery, R. W., Linde, J. A., Simon, G. E., Ludman, E. J., Rohde, P., Ichikawa, L. E., & Finch, E. A. (2009). Reported food choices in older women in relation to body mass index and depressive symptoms. *Appetite*, 52(1), 238-240. doi:10.1016/j.appet.2008.08.008

⁶ Agurs-Collins, T., & Fuemmeler, B. F. (2011). Dopamine polymorphisms and depressive symptoms predict foods intake. Results from a nationally representative sample. *Appetite*, 57(2), 339-348. doi:10.1016/j.appet.2011.05.325

discusses the time period diet was assessed and the time window it represents.

- Before pregnancy:
 - Grieger et al. (20) collected data at 13 weeks, but the recall period was 12 months prior to conception.
 - Monteagudo et al. (19), Gresham et al. (4) and Xie et al. (17) did not specify a particular time period when the diet was assessed (which could have ranged from before to during pregnancy).
- First trimester: The following studies assessed diet during the first trimester, only:
 - Rodriguez-Bernal et al. (8)
 - Bouwland-Both et al. (3)
 - Timmermans et al. (2)
- Second trimester: The following studies assessed diet during the second trimester, only:
 - Hillesund et al. (5)
 - Chia et al. (11)
 - Colon-Ramos et al. (12)
 - Knudsen et al. (13)
 - Lu et al. (14)
- Third trimester: Northstone et al. (15) assessed diet during the third trimester, only.
- In the following studies, diet measurement spanned multiple trimesters -
 - Rifas-Shiman et al. (9) assessed maternal diet at two distinct time points: first trimester (11.7 ± 3.1 weeks) and second trimester (26 to 28 weeks)
 - Poon et al. (6) assessed diet in a window of 26 to 36 weeks.
 - Chatzi et al. (7) used multiple cohorts, with INMA collecting maternal diet data during the first trimester ($\sim 13.8 \pm 2$ weeks) and Rhea collecting dietary data between 14 and 18 weeks.
 - Shapiro et al. (10) collected dietary data one to eight times between 8 and 24 weeks.
 - Although Okubo et al. (16) collected data at around 18 weeks, the range spanned between 5 and 39 weeks.
 - Clapp (21) assigned diets randomly around 8 weeks and followed them until delivery.
 - Khoury et al. (1) assigned participants to one of two experimental diets between 17 and 20 weeks and followed them until delivery.
- The recall period varied from a few days (10, 11, 17) to a few weeks (13, 14) to a few months (2, 3, 5-9, 12, 16).

Outcomes:

Studies assessed several outcomes including birth weight (reported in grams or kilograms), low birth weight, weight-for-length and weight-for-age z scores, macrosomia, SGA, AGA, LGA, body composition, and IUGR. Some studies also assessed fetal growth measures, including crown-rump length, estimated fetal weight, fetal head circumference, abdominal circumference, femur length, and placental resistance measured using pulsatility index umbilical artery and resistance index uterine artery. Many studies did not standardize for gestational age or sex when assessing birth weight (i.e., they used “raw” birth weight as the outcome across a

range of preterm and term births). Specifically, one-third of studies (n=7) used both gestational age and sex-specific cut-off values when defining SGA, AGA, LGA and IUGR (1, 5, 6, 11, 13, 14, 16). Table 5: Summary of outcome definitions, summarizes the outcomes and diagnostic criteria grouped by methodology used to create dietary patterns.

Table 2: Indices and scores used to assess the relationship between dietary patterns before and during pregnancy and birth weight

Index/Score (Reference)	Mediterranean diet ¹⁰ (min-max score)	Australian Recommended Food Score ¹¹ (min-max score)	New Nordic Diet Score ^{12,13}	Nutritional Risk Score ^{14,15} (min-max score)
Article	Chatzi et al., 2012	Gresham et al., 2016	Hillesund et al., 2014	Kennedy, 1986
Component	Total score: 0-8	Total score: 0-72	Total score: 0-10	Total score: 0-100
Vegetables	Vegetables ≥Median = 1; <Median = 0	Vegetables (0-22)	Root Vegetables ≥Median = 1; <Median = 0 Cabbages ≥Median = 1; <Median = 0 Potatoes relative to rice and pasta combined ≥Median = 1; <Median = 0	Fruits and vegetables (0-30)
Fruits	Fruits and nuts ≥Median = 1; <Median = 0	Fruits (0-14)	Nordic fruits ≥Median = 1; <Median = 0 Native berries (includes "foods from wild countryside")	<i>Fruits included with vegetables above</i>

¹⁰ Trichopoulou A, Costacou T, Bamia C, et al. (2003) Adherence to a Mediterranean diet and survival in a Greek population. N Engl J Med 348, 2599–2608.

¹¹ Collins CE, Young AF & Hodge A (2008) Diet quality is associated with higher nutrient intake and self-rated health in mid-aged women. J Am Coll Nutr 27, 146–157.

¹² Includes meal frequency, which is not included as a component in this table.

¹³ Mithril C, Dragsted LO, Meyer C et al. (2012) Guidelines for the New Nordic Diet. Public Health Nutr 15, 1941–1947.

¹⁴ No reference provided.

¹⁵ Supplements and 'other foods and beverages' were also measured but not included in the score

Index/Score (Reference)	Mediterranean diet ¹⁰ (min-max score)	Australian Recommended Food Score ¹¹ (min-max score)	New Nordic Diet Score ^{12,13}	Nutritional Risk Score ^{14,15} (min-max score)
Cereals/ Grains and whole grains	Cereals ≥Median = 1; <Median = 0	Grains (0-14)	Whole grain bread ≥Median = 1; <Median = 0 Oatmeal porridge ≥Median = 1; <Median = 0	Bread and cereal (0-15)
Nuts and legumes	Legumes ≥Median = 1; <Median = 0 <i>Nuts included with fruits</i>	<i>See under fish and other protein foods</i>		<i>Nuts, peanut butter, and legumes included under meat</i>
Meat	Meat ≥Median = 0; <Median = 1 (reverse scored)	<i>Meat included as part of protein</i>		Meat or alternatives (0-40)
Fish and other protein foods	Fish and seafood ≥Median = 1; <Median = 0	Fish (0-2) Meat (0-5) Nuts/bean/soya (0-6)	Foods from wild countryside (wild fish, seafood, game) ¹⁶ <i>Also includes native berries, captured as part of fruits</i> ≥Median = 1; <Median = 0	<i>Fish, liver, and eggs included as part of meat</i>

¹⁶ Salmon and Trout excluded

Index/Score (Reference)	Mediterranean diet ¹⁰ (min-max score)	Australian Recommended Food Score ¹¹ (min-max score)	New Nordic Diet Score ^{12,13}	Nutritional Risk Score ^{14,15} (min-max score)
		Eggs (0-1)		
Dairy	Dairy products ≥Median = 1; <Median = 0	Dairy (0-7)	Milk ≥Median = 1; <Median = 0	Milk and cheese (0-15)
Fat	MUFA:SFA ratio ≥Median = 1; <Median = 0	Fat (0-1)		
Empty calories				
Fiber				
Micronutrients				
Sweetened beverages				
Water			Water consumption relative to sweetened beverages ≥Median = 1; <Median = 0	
Alcohol	Excluded alcohol	Excluded alcohol		

Index/Score (Reference)	Mediterranean Diet Score for Pregnancy ¹⁷	AHEI-P (min-max score) ¹⁸	Alternate Mediterranean Diet ¹⁹	AHEI-P (min-max score) ²⁰	HEI-2010 ²¹
Article	Monteagudo et al., 2016	Poon et al., 2013	Poon et al., 2013	Rifas-Shiman et al., 2009; Rodriguez-Bernal et al., 2010	Shapiro et al., 2016
Component	Total score: 4-11	Total score: 0-130	Total score: 0-8	Total score: 0-90	Total score: 0-100
Vegetables	Vegetables ≥Median = 1; <Median = 0	Vegetables (0-10)	Vegetables ≥Median = 1; <Median = 0	Vegetables (0-10) (Includes tofu and soybeans)	Total vegetables (0-5) Greens and beans (0-5)
Fruits	Fruits and nuts ≥Median = 1; <Median = 0	Whole fruit (0-10)	Fruits ≥Median = 1; <Median = 0	Fruits (0 -10)	Total fruit (0-5) Whole fruit (0-5)
Cereals/ Grains and whole grains	Cereals ≥Median = 1; <Median = 0	Whole grains (0-10)	Whole grains ≥Median = 1; <Median = 0		Whole grains (0-10)

¹⁷ Mariscal-Arcas, M., Rivas, A., Monteagudo, C., Granada, A., Cerrillo, I., Olea-Serrano, F., 2009. Proposal of a Mediterranean diet index for pregnant women. Br. J. Nutr. 102 (5), 744e749.

¹⁸ S. L. Rifas-Shiman, J. W. Rich-Edwards, K. P. Kleinman, E. Oken, and M. W. Gillman, "Dietary quality during pregnancy varies by maternal characteristics in project viva: A US cohort," Journal of the American Dietetic Association, vol. 109, no. 6, pp. 1004–1011, 2009.

¹⁹ Trichopoulou A, Costacou T, Bamia C, et al. (2003) Adherence to a Mediterranean diet and survival in a Greek population. N Engl J Med 348, 2599–2608.

²⁰ McCullough ML, Feskanich D, Stampfer MJ, Giovannucci EL, Rimm EB, Hu FB, Spiegelman D, Hunter DJ, Colditz GA, Willett WC. Diet quality and major chronic disease risk in men and women: Moving toward improved dietary guidance. Am J Clin Nutr. 2002; 76:1261–1271.

²¹ Guenther PM, Casavale KO, Reedy J, Kirkpatrick SI, Hiza HAB, Kuczyński KJ et al. Update of the Healthy Eating Index: HEI-2010. J Acad Nutr Diet 2013; 113:569–580.

Index/Score (Reference)	Mediterranean Diet Score for Pregnancy ¹⁷	AHEI-P (min-max score) ¹⁸	Alternate Mediterranean Diet ¹⁹	AHEI-P (min-max score) ²⁰	HEI-2010 ²¹
					Refined grains (0-10) (reverse scored)
Nuts and legumes	Pulses ≥Median = 1; <Median = 0 <i>Nuts included with fruits</i>	Nuts and legumes (0-10)	Legumes ≥Median = 1; <Median = 0 Nuts ≥Median = 1; <Median = 0		<i>See fish and other protein foods below</i>
Meat	Meat ≥Median = 0; <Median = 1 (reverse scored)	Red/processed meat (10-0) ⁴ (reverse scored)	Red and processed meats ≥Median = 0; <Median = 1 (reverse scored)	Ratio of white (poultry/ fish) to red meat (beef, pork, lamb, processed) (0 -10) <i>Excluded nuts and soy</i>	
Fish and other protein foods	Fish ≥Median = 1; <Median = 0		Fish ≥Median = 1; <Median = 0	<i>Included with meat</i>	Total protein foods (0-5) Seafood and plant proteins (0-5)
Dairy	Dairy products ≥Median = 0; <Median = 1 (reverse scored)				Dairy (0-10)
Fat	MUFA:SFA ratio ≥Median = 1; <Median = 0	<i>trans</i> fat (10-0) ⁴ (reverse scored)	MUFA:SFA ratio ≥Median = 1; <Median = 0	<i>trans</i> fat (0 - 10) (reverse scored)	Fatty acids (0-10)

Index/Score (Reference)	Mediterranean Diet Score for Pregnancy ¹⁷	AHEI-P (min-max score) ¹⁸	Alternate Mediterranean Diet ¹⁹	AHEI-P (min-max score) ²⁰	HEI-2010 ²¹
		Long-chain (n= 3) fats (EPA + DHA) (0-10)		PUFA:SFA ratio (0-10)	
		PUFA (0-10)			
	Empty calories				Empty calories (0-20)
	Fiber			Fiber (0-10)	
Micronutrients	Folic acid ≥2/3 RDI for pregnancy = 1; <2/3 RDI for pregnancy = 0	Sodium (10-1) ⁴ (reverse scored)		Folate (0-10)	Sodium (0-10) (reverse scored)
	Iron ≥2/3 RDI for pregnancy = 1; <2/3 RDI for pregnancy = 0	Calcium (0-10)		Calcium (0-10)	
	Calcium ≥2/3 RDI for pregnancy = 1; <2/3 RDI for pregnancy = 0	Folate (0-10)		Iron (0-10)	
		Iron (0-10)			
Sweetened beverages		Sugar-sweetened beverages (10-0) ⁴ (reverse scored)			

Index/Score (Reference)	Mediterranean Diet Score for Pregnancy ¹⁷	AHEI-P (min-max score) ¹⁸	Alternate Mediterranean Diet ¹⁹	AHEI-P (min-max score) ²⁰	HEI-2010 ²¹
Water					
Alcohol		<i>Excluded alcohol</i>	<i>Excluded alcohol</i>	<i>Excluded alcohol</i>	<i>Excluded alcohol</i>

Table 3: Summary of dietary patterns identified using factor or principal components analysis

Study	Dietary Patterns
Bouwland-Both, 2013	<p>Energy-rich pattern: high intakes of bread/breakfast cereals, margarine, nuts, snacks/sweets and nonsweetened nonalcoholic beverages; low intakes of sweetened, nonalcoholic beverages</p> <p>Mediterranean pattern*: high intakes of vegetables, legumes, pasta/rice, dairy, fish/shellfish, vegetable oils, alcohol, nonsweetened nonalcoholic beverages; low intakes of processed meat</p> <p>Western pattern*: high intakes of potatoes, pasta/rice, dairy, fresh meat, processed meat, margarine and alcohol; low intakes of nuts, fish/shellfish</p> <p>*Mediterranean and Western dietary patterns showed no significant association with crown-rump length (CRL) and so were not included in the analysis</p>
Chia, 2016	<p>Vegetable, fruit, and white rice pattern: characterized by higher intakes of vegetables, fruits, plain white rice, whole-grain bread, fish, and nuts and seeds and lower intakes of fried potatoes, burgers, carbonated and sweetened drinks, and flavored rice</p> <p>Seafood and noodle pattern: higher intakes of soup, seafood, fish and seafood products, noodles (flavored and in soup), and low-fat red meat and lower intakes of legumes, ethnic bread, white rice, and curry-based gravies</p> <p>Pasta, cheese, and processed meat pattern: characterized by high intakes of pasta-, tomato-, and cream-based gravies, cheese, and processed meat</p>
Colón-Ramos, 2015	<p>Healthy pattern: high positive loadings for vegetables, fruits, non-fried fish and chicken, and water</p> <p>Processed pattern: high positive loadings for processed meat, fast food items, snacks sweets, and soft drinks</p> <p>Southern pattern: high positive loadings for cooked cereals, peaches, corn fried fish, beans, greens, pig's feet, neck bones oxtails, tongue, and pork</p> <p>Healthy-processed pattern: combination of these two DPs above</p> <p>Healthy-southern pattern: combination of these two DPs above</p> <p>Southern-processed pattern: combination of these two DPs above</p> <p>Mixed pattern: foods from all other patterns together</p>

Study	Dietary Patterns
Grieger, 2014	<p>High-protein/fruit pattern: fish, meat, chicken, fruit, whole grains</p> <p>High-fat/sugar/takeaway pattern: takeaway foods, potato chips, refined grains, added sugar</p> <p>Vegetarian-type pattern: vegetables, whole grains, legumes</p>
Knudsen, 2008	<p>Western pattern: highest intake of high-fat dairy, refined grains, processed and red meat, animal fat (butter and lard), potatoes, sweets, beer, coffee, and high-energy drinks; lowest intake of fruits and vegetables (35% of energy intake from fat)</p> <p>Health conscious pattern: high intake of fruits, vegetables, fish, poultry, breakfast cereals, vegetable juice, and water; lowest intake of meat and fat of animal origin (25% of energy intake from fat)</p> <p>Intermediate pattern: high intake of low-fat dairy and fruit juice; consumption of the remaining food groups in between Western and Health conscious DPs (30% of energy intake from fat)</p>
Lu, 2016	<p>Cereals, eggs, and Cantonese soups pattern: highest content of staples such as rice, pasta, porridge, eggs, and Cantonese soups; represents a traditional Cantonese diet</p> <p>Dairy pattern: highest content of dairy</p> <p>Fruits, nuts, and Cantonese desserts pattern: highest content of fruits, nuts, and Cantonese desserts</p> <p>Meats pattern: highest content of red meat and processed meat</p> <p>Vegetables pattern: highest content of leafy and cruciferous vegetables</p> <p>Varied pattern: characterized by relatively high intakes of mixed food, including noodles, bread, root vegetables, melon vegetables, mushrooms, sea vegetables, bean vegetables, processed vegetables, poultry, animal organ meat, fish, other seafood, bean products, yoghurt, sweet beverages, puffed food, confectioneries, and snacks</p>

Study	Dietary Patterns
Northstone, 2008	<p>Health-conscious pattern: high loadings on salad, fruit, rice, pasta, breakfast cereals, fish, eggs, pulses, fruit juices, poultry and non-white bread</p> <p>Traditional pattern: high loadings on green vegetables and root vegetables, potatoes, peas and to some extent red meat and poultry</p> <p>Processed pattern: high loadings on high-fat processed foods, such as meat pies, sausages and burgers, fried foods, pizza, chips and crisps</p> <p>Confectionery pattern: characterized by high intakes of confectionery and other foods with high sugar content such as chocolate, sweets, biscuits, cakes and other puddings</p> <p>Vegetarian pattern: loaded highly on meat substitutes, pulses, nuts and herbal tea and high negative loadings were seen with red meat and poultry</p>
Okubo, 2012	<p>Meat and eggs pattern: high intake of beef and pork, processed meat, chicken, eggs, butter and dairy products</p> <p>Wheat products pattern: high intake of bread, confectioneries, fruit and vegetable juice, and soft drinks</p> <p>Rice, fish, and vegetables pattern: high intake of rice, potatoes, nuts, pulses, fruits, green and yellow vegetables, white vegetables, mushrooms, seaweeds, Japanese and Chinese tea, fish, shellfish, sea products, miso soup and salt-containing seasoning</p>

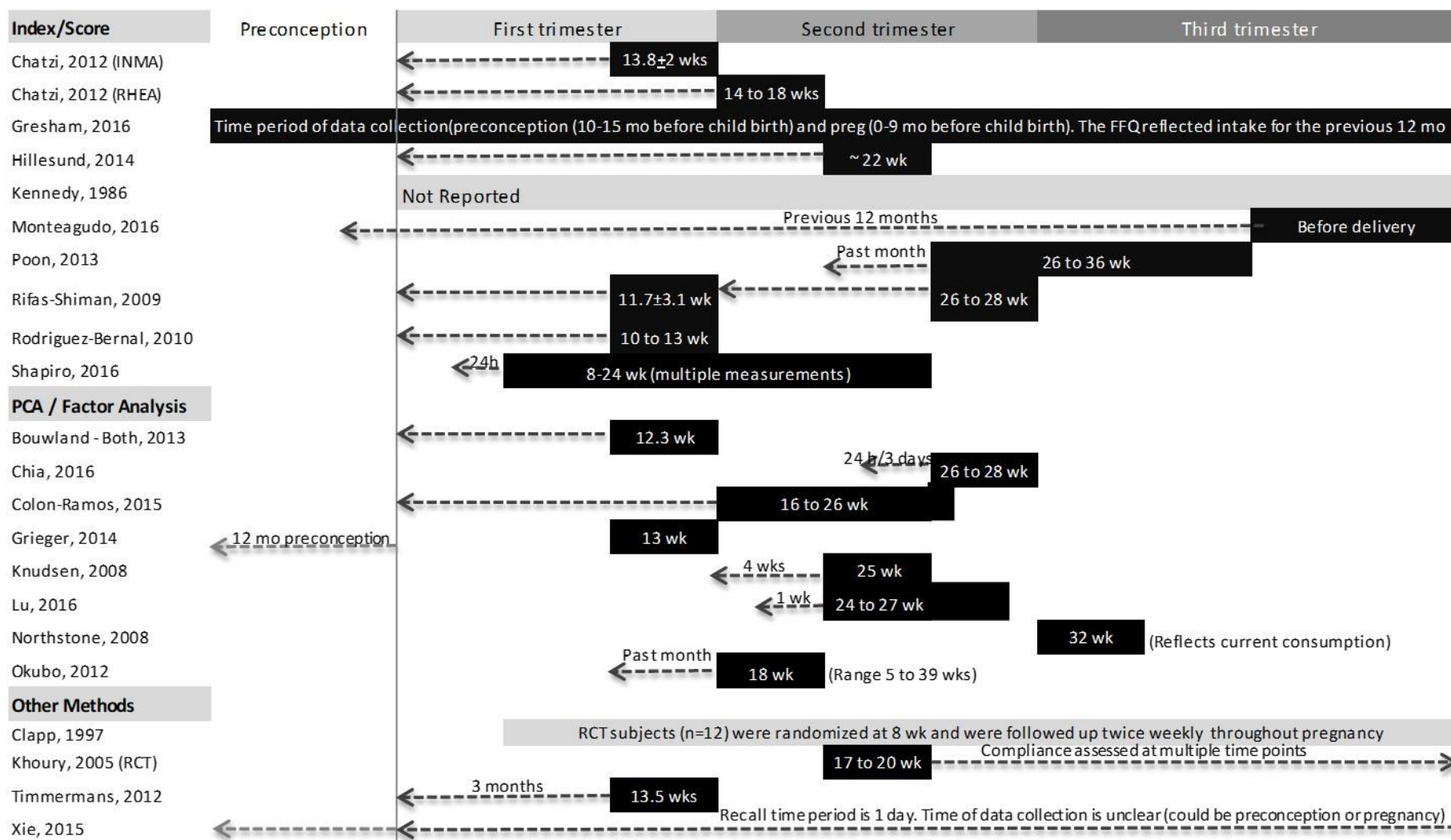
Table 4: Time point of exposure assessment

Table 5: Summary of outcome definitions

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Index/Score						
Chatzi, 2012	Fetal growth restriction (weight, length, head circumference) Birth weight	FGR: birth weight <10th percentile of the predicted birth weight distribution	NR	Obtained from hospital delivery logs and medical records	N/A	Birth length Head circumference
Gresham, 2016	Low birth weight	LBW: <2500g or 5.5lbs	NR	Self-reported	N/A	Gestational hypertension GDM Premature birth
Hillesund, 2014	SGA, AGA, LGA (Gestational age: 37-42 weeks)	SGA: <10th “gender-specific” birth weight percentile LGA: >90th “gender-specific” ²² birth weight percentile	NR	Newborn weight obtained from Medical Birth Registry of Norway and categorized by “gender-specific” cut-off values	N/A	Gestational weight gain
Kennedy, 1986	Birth weight	LBW: <2500g	NR	Extracted from medical records	N/A	N/A

²² “Gender” was used here for consistency with the definition given in the article.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Monteagudo, 2016	Birth weight (g)	N/A	N/A	Measured to the nearest gram by staff trained in using standard protocols (Lohman, 1988)	Lohman, 1988 ²³	N/A
Poon, 2013	SGA LGA Birth weight (g) (Gestational age: ≥35 – ≤43.5)	SGA: ≤10th “gender-specific” birth weight for gestational age percentile LGA: ≥90th “gender-specific” ²⁴ birth weight for gestational age percentile	Canadian reference for birth weight for gestational age	Reported on birth screener Gestational age determined based on expected date of delivery and infant birth date	Kramer, 2001 ²⁵	Early infant growth (4-6 months)
Rifas-Shiman, 2009	Birth weight for gestational age z-scores SGA LGA	SGA: <10th birth weight percentile LGA: >90th birth weight percentile	Oken, 2003	NR	Oken, 2003 ²⁶	Preeclampsia Gestational diabetes Gestational weight gain

²³ Lohman, T., Roche, A., Martorell, R., 1988. Anthropometric Standardization Reference Manual. Humana Kinetics Books, Illinois.

²⁴ “Gender” was used here for consistency with the definition given in the article.

²⁵ M. S.Kramer, R.W. Platt, S.W.Wenet al., “Anewand improved population-based Canadian reference for birth weight for gestational age,” Pediatrics, vol. 108, no. 2, article E35, 2001.

²⁶ Oken E, Kleinman KP, Rich-Edwards JW, Gillman MW. A nearly continuous measure of birth weight for gestational age using a United States national reference. BMC Pediatr. 2003; 3:6.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Rodriguez-Bernal, 2010	Fetal growth restriction Birth weight for gestational age (g)	FGR: below lower limit of confidence interval for growth potential predictions at 80%	Mamelle, 2006	<u>FGR</u> Estimated based on constitutional growth potential <u>Birth weight</u> Obtained from hospital delivery logs and medical records Gestational age based on date of last menstrual period self-reported by the mothers and corrected by ultrasound	Mamelle, 2006 ²⁷	Birth length Head circumference

²⁷ Mamelle N, Boniol M, Rivie`re O, et al. Identification of newborns with fetal growth restriction (FGR) in weight and/or length based on constitutional growth potential. Eur J Pediatr 2006;165:717–25.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Shapiro, 2016	Birth weight (g) (Gestational age: ≥32 weeks)	N/A	N/A	Results extracted from medical records	N/A	Birth length Head circumference Skin-fold thickness Neonatal body composition: fat mass and fat-free mass
PCA / Factor analysis						
Bouwland-Both, 2013	Crown-rump length Estimated fetal weight Birth weight (g)	N/A	N/A	<u>CRL</u> Ultrasound <u>EFW</u> Calculated using Hadlock's formula <u>Birth weight</u> Obtained from community midwife and hospital registries	Usher, 1969 ²⁸ (standards for calculating GA & BW)	Biomarkers of the one-carbon pathway (folate and total homocysteine in plasma and vitamin B12 in serum)

²⁸ Usher R, McLean F. Intrauterine growth of live-born Caucasian infants at sea level: standards obtained from measurements in 7 dimensions of infants born between 25 and 44 weeks of gestation. J Pediatr 1969;74:901–10.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Chia, 2016	Birth weight (g)SGA LGA	SGA: <10th percentile for gestational age (At 40 weeks of gestation, 2964 g for males, 2947 g for females) LGA: >90th percentile for gestational age (At 40 weeks of gestation, 3838 g for males; 3716 g for females)	Mikolajczyk, 2011	Birth weight measured using a SECA 334 weighing scale to the nearest 1 g; retrieved from birth delivery reports SGA and LGA determined using global birth-weight reference	Mikolajczyk, 2011 ²⁹	Preterm birth
Colon-Ramos, 2015	Birth weight (weight-for-length and weight-for-age z-scores) (Gestational age ≥37 weeks)	N/A	N/A	Obtained from medical charts	N/A	Head circumference

²⁹ Mikolajczyk RT, Zhang J, Betran AP, Souza JP, Mori R, Guñmezoglu AM, Merialdi M. A global reference for fetal-weight and birthweight percentiles. Lancet 2011;377:1855–61.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Grieger, 2014	Fetal birth weight (g) (LBW, SGA, IUGR, LGA, Macrosomia)	LBW: <2500 g and SGA SGA: <10th percentile for gestational age IUGR: <3rd percentile for gestational age LGA: >90th percentile for gestational age Macrosomia: >4000 g	NR	Collected at delivery (method NR)	N/A	Preterm birth
Knudsen, 2008	Birth weight (g) (SGA)	SGA: z-score below the 2.5th percentile for respective sex and gestational age	Marsal, 1996	Extracted from the National Patient Registry in Denmark	Marsal, 1996 ³⁰	N/A

³⁰ Marsal K, Persson PH, Larsen T, Lilja H, Selbing A, Sultan B (1996). Intrauterine growth curves based on ultrasonically estimated foetal weights. Acta Paediatr 85, 843–848.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Lu, 2016	Birth weight (SGA, LGA)	SGA: birth weight <10th percentile of Guangzhou gestational age- and sex-specific reference growth curves LGA: birth weight >90th percentile of Guangzhou gestational age- and sex-specific reference growth curves	Birthweight reference in Guangzhou	Birth weight and gestational age obtained from medical charts	He, 2014 ³¹	N/A
Northstone, 2008	Birth weight (g)	N/A	N/A	Recorded in delivery room; abstracted from birth notifications	N/A	N/A

³¹ He, J.R.; Xia, H.M.; Liu, Y.; Xia, X.Y.; Mo, W.J.; Wang, P.; Cheng, K.K.; Leung, G.M.; Feng, Q.; Schooling, C.M.; et al. A new birthweight reference in Guangzhou, southern china, and its comparison with the global reference. Arch. Dis. Child. 2014, 99, 1091–1097.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Okubo, 2012	Birth weight (g) (Gestational age: 37-41 weeks)	SGA: birth anthropometric measurements <10th percentile of the Japanese gestational age- and sex-specific reference growth curves	Ministry of Health, Labor, and Welfare of Japan	Self-administered questionnaire (Women were asked to refer to the neonatal anthropometric measurements recorded by the obstetrician or midwife in their Maternal and Child Health Handbook)	Ministry of Health, Labor, and Welfare of Japan, 2001 ³²	Birth length Head circumference Gestational weight gain
Other Method						
Clapp, 1997	Birth weight (kg)	N/A	N/A	Measured to the nearest 10g using a measurement box (Clapp, 1996)	Clapp, 1996 ³³	<u>Neonatal</u> Birth length Head circumference Abdominal circumference % body fat Fat mass (gm) Lean body mass (kg)

³² Ministry of Health, Labor, and Welfare of Japan (2001) children and Infant Growth Survey on anthropometric parameters, 2000. <http://www.mhlw.go.jp/houdou/0110/h1024-4.html> (accessed December 2010).

³³ Clapp JF (1996) Morphometric and neurodevelopmental outcome at age five years of the offspring of women who continued to exercise during pregnancy. J Pediatr 129:856–863

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Khoury, 2005	IUGR Birth weight (g)	IUGR: birth weight <10th percentile for gestational age and "gender" ³⁴ according to Norwegian percentiles	Norwegian percentiles	Obtained from hospital records	Skjærven, 2000 ³⁵	Maternal, cord, and neonatal cholesterol levels Hypertensive complications of pregnancy Preterm delivery Gestational weight gain
Timmermans, 2012	Fetal size until birth (head circumference, abdominal circumference, femur length, estimated fetal weight) Placental resistance (pulsatility index umbilical artery, resistance index uterine artery) Birth weight (g)	IUGR ³⁶ : gestational age-adjusted birth weight below percentile -2.3 in the study cohort (SD <-2.0)	NR	Fetal size (including IUGR): growth chart and constructed using fetal ultrasound measurements; Placental resistance: colour Doppler (Umbilical artery pulsatility index and Uterine artery resistance index); Birth weight: medical records	N/A	N/A

³⁴ "Gender" was used here for consistency with the definition given in the article.

³⁵ 11 Skjærven R, Gjessing HK, Bakketeig LS. Birth weight by gestational age in Norway. Acta Obstet Gynecol Scand 2000;79:440-9.

³⁶ The authors measured IUGR but did not include it in outcome analyses.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Xie, 2015	Birth weight (kg)	N/A	N/A	Self-reported: Participants who had given birth were asked, "How much did the baby weigh at birth?"	N/A	Gestational age

Evidence synthesis

With 21 included studies, there is a substantial body of evidence available to examine the relationship between dietary patterns before and during pregnancy and gestational age- and sex-adjusted birth weight. Table 6: Results grouped by methodology used for dietary pattern assessment, and the following section provide more information on the findings of each these studies. There is heterogeneity in the methodology employed to define and assess dietary patterns and in how outcomes were reported, which makes it difficult to compare across studies. Further, the time period of dietary assessment varied across studies.

Dietary patterns assessed via index/score

Nine studies used indices/scores to assess dietary patterns. Four of these studies found an association between adherence to a healthy dietary pattern and birth weight.

- Chatzi et al. (7) assessed maternal adherence to a Mediterranean Diet (MD) – characterized by vegetables, legumes, fruits and nuts, cereals, fish and seafood, dairy products, and the ratio of mono- to saturated lipids and all types of meat – in the context of fetal growth restriction and birth weight. The study included data from the multicenter INMA study (INMA-Atlantic and INMA-Mediterranean) and the RHEA study. Higher MD adherence in INMA-Mediterranean was associated with a lower risk of fetal growth restriction and higher birth weight. In the other two cohorts, there was no association between MD adherence and the outcomes.
- Gresham et al. (4) examined the association between adherence to the Australian Recommended Food Score (ARFS) before and during pregnancy and self-reported low birth weight. Components included vegetables, fruit, grain, protein (nuts/bean/soya, meat, fish, eggs), dairy, and fat. The exposure captured dietary intake during the previous 12 months. The time point of data collection ranged from before pregnancy to the end of the third trimester of pregnancy. The study found no significant difference in the odds of low birth weight based on adherence to the ARFS.
- Hillesund et al. (5) assessed maternal adherence to the New Nordic Diet (NND), which measured the frequency of eating the following foods: Nordic fruits (apples, pears, plums, strawberries), root vegetables (carrots, rutabaga and various types of onions), cabbages (kale, cauliflower, broccoli and Brussels sprouts), potatoes, whole grain breads, oatmeal porridge, foods from the wild countryside (wild fish, seafood, game and wild berries), milk and water. (The NND also measured the frequency of main meals per week.) High adherence to the NND, compared to low adherence, was associated with reduced odds of having an SGA baby and greater odds of having an LGA baby.
- Kennedy (18) examined the relationship between a nutritional risk score and birth weight. Components of the risk score included meat or alternatives (meats, fish, poultry, liver, eggs, nuts, peanut butter, legumes), milk and cheese, bread and cereal (whole grain, enriched, other), and four categories of fruits and vegetables (citrus and/or vitamin C-rich vegetables, green and yellow vegetables, all other including potato, and total fruits). The study found no association between nutritional risk score and birth weight.
- Monteagudo et al. (19) assessed the relationship between the Mediterranean Diet Score for Pregnancy (MDS-P) and birth weight. The components of MDS-P

included vegetables, fruit and nuts, pulses, cereals, fish, ratio of monounsaturated to saturated fats, meat, dairy products and selected micronutrients (folic acid, iron, and calcium). A higher MDS-P score was a predictor of birth weight over 3,500 g.

- Poon et al. (6) assessed adherence to the Alternate Healthy Eating Index for Pregnancy (AHEI-P) and the Alternate Mediterranean Diet (aMED). AHEI-P was characterized by the following components: vegetables, whole fruit, whole grains, nuts and legumes, long-chain (n-3) fats, polyunsaturated fats, folate, calcium, iron, sugar-sweetened beverages, red and processed meat, *trans* fat, and sodium. aMED was characterized by vegetables, legumes, fruits, nuts, whole grains, fish, and the ratio of monounsaturated to saturated fats and red and processed meats. Adherence to the AHEI-P or aMED was not associated with birth weight or risk of SGA or LGA.
- Rifas-Shiman et al. (9) used an Alternate Healthy Eating Index modified for pregnancy (AHEI-P), which was characterized by intake of vegetables, fruit, ratio of white to red meat, fiber, *trans* fat, ratio of polyunsaturated to saturated fatty acids, and folate, calcium, and iron from foods. Greater adherence to the AHEI-P during the first or second trimester of pregnancy did not alter the risk of having an SGA or LGA baby.
- Rodriguez-Bernal et al. (8) assessed adherence to the Alternate Healthy Eating Index (AHEI) modified for pregnancy. Components of the AHEI included vegetables, fruit, nuts and soy, ratio of white meat (fish and poultry) to red meat, cereal fiber, *trans* fat, the ratio of polyunsaturated to saturated fat, and the intake of folate, calcium, and iron from foods. Higher adherence to the AHEI was associated with a lower risk of fetal growth restriction (estimated fetal weight) and improved birth weight.
- Shapiro et al. (10) used the Healthy Eating Index-2010 (HEI-2010) to assess diet quality during pregnancy. The components of HEI-2010 included total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, fatty acids, refined grains, sodium and empty calories. Better maternal diet quality, defined as greater adherence to the HEI-2010 (score >57), was not associated with birth weight.

Dietary patterns assessed via factor or principal component analysis

Eight studies used data-driven methods (i.e., principal component analysis, exploratory factor analysis, and cluster analysis) to assess dietary patterns. Five of the eight studies found a relationship between diet and birth weight outcomes. A summary of findings from these studies is presented below.

- Bouwland-Both et al. (3) generated three dietary patterns. Higher adherence to the energy-rich dietary pattern (characterized by high intakes of bread/breakfast cereals, margarine, nuts, snacks/sweets and nonsweetened nonalcoholic beverages, and low intakes of sweetened, nonalcoholic beverages) was associated with a greater crown-rump length. However, the energy-rich dietary pattern was not associated with estimated fetal weight or birth weight. The Mediterranean and Western dietary patterns were not associated with crown-rump length and so were not included in further analyses.
- Chia et al. (11) showed that greater adherence to a vegetable, fruit and white rice dietary pattern (characterized by higher intakes of vegetables, fruits, plain

white rice, whole-grain bread, fish, and nuts and seeds and lower intakes of fried potatoes, burgers, carbonated and sweetened drinks, and flavored rice) was associated with an increased risk of having LGA babies, but was not associated with having SGA babies. Chia et al. also assessed other dietary patterns (seafood and noodle and pasta, cheese and processed meat), which were not associated with birth weight or having SGA or LGA babies.

- Colon-Ramos et al. (12) generated three dietary patterns:
 - Healthy, characterized by high positive loadings for vegetables, fruits, non-fried fish and chicken, and water
 - Processed, characterized by high positive loadings for processed meat, fast food items, snacks sweets, and soft drinks
 - Southern, characterized by high positive loadings for cooked cereals, peaches, corn fried fish, beans, greens, pig's feet, neck bones oxtails, tongue, and pork

The authors also generated healthy-processed, healthy-Southern, Southern-processed, and mixed patterns, reflecting a combination of one or more of the above dietary patterns. None of these patterns were associated with weight-for-length and weight-for-age.

- Grieger et al. (20) measured dietary patterns before pregnancy. Three dietary patterns were generated:
 - High protein/fruit, characterized by a diet rich in fish, meat, chicken, fruit and whole grains
 - High fat, sugar/takeaway, characterized by takeaway foods, potato chips, refined grains, added sugar
 - Vegetarian type, characterized by a diet rich in vegetables, whole grains, legumes

There was no association between any of these dietary patterns and the risk of having LBW or SGA babies.

- Knudsen et al. (13) used PCA to create three different dietary patterns:
 - Western pattern, including highest intake of high-fat dairy, refined grains, processed and red meat, animal fat (butter and lard), potatoes, sweets, beer, coffee, and high-energy drinks; lowest intake of fruits and vegetables (35% of energy intake from fat)
 - Health conscious pattern, including high intake of fruits, vegetables, fish, poultry, breakfast cereals, vegetable juice, and water; lowest intake of meat and fat of animal origin (25% of energy intake from fat)
 - Intermediate pattern, including high intake of low-fat dairy and fruit juice; consumption of the remaining food groups in between Western and Health conscious DPs (30% of energy intake from fat)

When compared to a Western dietary pattern, adherence to an intermediate or health conscious dietary pattern was associated with lower odds of having an SGA baby.

- Lu et al. (14) generated the following dietary patterns using cluster analysis:
 - Cereals, eggs, and Cantonese soups pattern, with highest content of staples such as rice, pasta, porridge, eggs, and Cantonese soups; represents a traditional Cantonese diet
 - Dairy pattern, with highest content of dairy
 - Fruits, nuts, and Cantonese desserts pattern, with highest content of fruits, nuts, and Cantonese desserts

- Meats pattern, with highest content of red meat and processed meat
- Vegetables pattern, with highest content of leafy and cruciferous vegetables
- Varied pattern, characterized by relatively high intakes of mixed food, including noodles, bread, root vegetables, melon vegetables, mushrooms, sea vegetables, bean vegetables, processed vegetables, poultry, animal organ meat, fish, other seafood, bean products, yoghurt, sweet beverages, puffed food, confectioneries, and snacks

When compared to the cereals, eggs, and Cantonese soups pattern (representing a traditional Cantonese diet), none of the dietary patterns were significantly associated with birth weight for gestational age.

- Northstone et al. (15) used PCA to create the following dietary patterns:
 - Health-conscious pattern, with high loadings on salad, fruit, rice, pasta, breakfast cereals, fish, eggs, pulses, fruit juices, poultry and non-white bread
 - Traditional pattern, with high loadings on green vegetables and root vegetables, potatoes, peas and to some extent red meat and poultry
 - Processed pattern, with high loadings on high-fat processed foods, such as meat pies, sausages and burgers, fried foods, pizza, chips and crisps
 - Confectionery pattern, with high intakes of confectionery and other foods with high sugar content such as chocolate, sweets, biscuits, cakes and other puddings
 - Vegetarian pattern, loaded highly on meat substitutes, pulses, nuts and herbal tea and high negative loadings of red meat and poultry

The health conscious dietary pattern was associated with higher birth weight, while the processed and vegetarian patterns were associated with lower birth weight. There was no association between the traditional and confectionery patterns and birth weight.

- Okubo et al. (16) used cluster analysis to create the following dietary patterns:
 - Meat and eggs pattern, characterized by high intake of beef and pork, processed meat, chicken, eggs, butter and dairy products
 - Wheat products pattern, characterized by high intake of bread, confectioneries, fruit and vegetable juice, and soft drinks
 - Rice, fish, and vegetables pattern, characterized by high intake of rice, potatoes, nuts, pulses, fruits, green and yellow vegetables, white vegetables, mushrooms, seaweeds, Japanese and Chinese tea, fish, shellfish, sea products, miso soup and salt-containing seasoning

Adherence to the wheat products dietary pattern was associated with lower birth weight and a higher risk of SGA when compared to a rice, fish, and vegetable dietary pattern.

Dietary patterns assessed in the RCT

- Clapp (21) randomly assigned 12 subjects at 8 weeks of gestation to an aboriginal carbohydrate diet (a low glycemic index diet characterized by carbohydrates from unprocessed whole grains, fruits, beans, vegetables, and many dairy products) or a cafeteria carbohydrate diet (a high glycemic index diet characterized by carbohydrates from highly processed grains, root vegetables, and simple sugars). Mothers who were randomized to the cafeteria carbohydrate diet had babies with a greater mean birth weight when compared

to those randomized to the aboriginal carbohydrate diet.

- Khoury et al. (1) randomly assigned 290 participants to an intervention or control diet. The intervention diet was characterized by higher amounts of fruits and vegetables, fatty fish, vegetable oils, nuts and low-fat dairy. Participants were asked to restrict meat and replace it with avocado, as well as to limit coffee consumption to 2 cups/day. Subjects who were assigned to the control group were asked to consume their usual diet based on Norwegian foodstuffs and not to introduce more oils or low-fat meat and dairy products than usual (1). There were no significant associations between diet and birth weight or risk of IUGR.

Dietary patterns assessed through other methods

- Timmermans et al. (2) used logistic regression to assess adherence to the Mediterranean dietary pattern, characterized by higher intakes of pasta, rice, vegetable oils, fish, vegetables and alcohol and lower intakes of meat, potatoes and fatty sauces. Compared to high adherence, low adherence was associated with lower fetal abdominal circumference during late pregnancy and lower estimated fetal weight during mid- and late-pregnancy. Similarly, medium and low adherence was associated with lower birth weight when compared to high adherence.
- Xie et al. (17) defined the following dietary patterns on the basis of theoretical expectations:
 - High-calorie, sweet pattern, characterized by foods such as doughnuts, ice cream, chocolate candy, regular candy, and cookies
 - High-calorie, non-sweet pattern, characterized by steak, fried chicken, fried fish, pizza, hot dogs, sausage, cheese, whole milk, etc.
 - Low-calorie pattern, characterized by foods such as low-fat and skim milk, grilled chicken, grilled fish, apples, and breakfast cereal

The questionnaire was not validated, and the outcome was self-reported. In this adolescent-only cohort, there was no association between reported dietary patterns and birth weight.

Key for color-coding:
<i>Dietary pattern categorized as beneficial when...</i>
Greater adherence improves birth weight outcomes
Lower adherence is detrimental for birth weight outcomes
<i>Dietary pattern categorized as detrimental when...</i>
Greater adherence is detrimental for birth weight outcomes
Lower adherence improves birth weight outcomes

Table 6: Results grouped by methodology used for dietary pattern assessment

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Index/Score				
Before Pregnancy/ Before and During Pregnancy				
Gresham, 2016 Australia N = 1,897	Australian Recommended Food Score (ARFS) Based on consistency with Dietary Guidelines for Australian Adults and core foods within Australian Guide to Healthy Eating	Low birth weight (OR) Q1=REF		Q2: 0.8 (95% CI: 0.3, 1.8) Q3: 0.8 (95% CI: 0.3, 1.8) Q4: 0.5 (95% CI: 0.2, 1.2) Q5: 0.4 (95% CI: 0.1, 1.1)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Monteagudo, 2016 Spain N = 320	Mediterranean Diet Score for Pregnancy (MDS-P) <u>Positively-scored components:</u> high consumption (median intake) of vegetables, fruit and nuts, pulses, cereals, and fish; a high MUFA:SFA ratio; low consumption of meat and dairy products; and the Spanish RDI of selected micronutrients (folic acid, Fe, and Ca), considering two-thirds of the RDI for pregnant women as the cut-off point	Birth weight (OR*) Lower=REF *odds of weighing >3.5kg (third tertile) vs <2.5kg (first tertile)	Higher: 6.162 (95% CI: 1.438, 26.394)	
Pregnancy				

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Chatzi, 2012 Spain N = 2,461 Greece N = 889	Mediterranean Diet scale <u>Positively scored components:</u> vegetables, legumes, fruits and nuts, cereals, fish and seafood, dairy products, and ratio of mono- to saturated lipids <u>Negatively scored components:</u> all types of meat	Fetal growth restriction (RR) Low=REF	<i>Spain (INMA-Mediterranean):</i> High: 0.50 (95% CI: 0.28, 0.90)	Spain (INMA-Mediterranean): Medium: 0.76 (95% CI: 0.54, 1.06) Spain (INMA-Atlantic): Medium: 1.24 (95% CI: 0.81, 1.89) High: 0.97 (95% CI: 0.42, 2.26) Greece: Medium: 1.82 (95% CI: 0.95, 3.49) High: 1.96 (95% CI: 0.90, 4.25)
		Birth weight (β) Low=REF	<i>Spain (INMA-Mediterranean):</i> Medium: 55.20g (SE=23.52) High: 87.78g (SE=33.40)	Spain (INMA-Atlantic): Medium: -26.46g (SE=26.03) High: -82.85g (SE=47.67) Greece: Medium: -33.67g (SE=31.78) High: -20.42g (SE=42.33)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Hillesund, 2014 Norway N = 66,597	New Nordic Diet score Constructed to measure adherence with the fundamental guidelines of the NND <u>Positively-scored components:</u> (i) eating ≥24 main meals/week; (ii) eating Nordic fruits ≥5 times/week; (iii) eating root vegetables ≥5 times/week; (iv) eating cabbage ≥2 times/week; (v) eating potatoes ≥one-third of total occasions of eating potatoes, rice or pasta; (vi) choosing whole grain bread more often than refined bread; (vii) eating oatmeal ≥monthly; (viii) eating fish/game/berries about 2 times/week; (ix) drinking milk more often than juice; and (x) drinking ≥6 times as much water as sugar-sweetened beverages	SGA (OR) Low=REF	High: 0.92 (95% CI: 0.86, 0.99)	Medium: 0.95 (95% CI: 0.89, 1.02)
		AGA (OR) Low=REF		Medium: 1.00 (REF) High: 1.00 (REF)
		LGA (OR) Low=REF	High: 1.07 (95% CI: 1.00, 1.15)	Medium: 1.04 (95% CI: 0.97, 1.12)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Kennedy, 1986 USA N = 886	Nutritional Risk score Categorized as high, moderate, or low risk <u>Positively-scored components:</u> meat or alternatives (meats, fish, poultry [fresh or processed], liver, eggs, nuts, peanut butter, legumes), milk and cheese (maximum of 3 oz of cheese scored), bread and cereal (whole grain, enriched, other), and fruits and vegetables (4 categories: citrus and/or vitamin C-rich vegetables, green and yellow vegetables, all other including potato, total fruits)	Birth weight (mean)		High risk: 3,273g Moderate risk: 3,262g Low risk: 3,319 g
		Low birth weight (%)		High risk: 7.0% Moderate risk: 6.9% Low risk: 7.4%
Poon, 2013 USA N = 893	Alternative Healthy Eating Index for Pregnancy (AHEI-P) <u>Positively-scored components:</u> vegetables, whole fruit, whole grains, nuts and legumes, long-chain (n-3) fats, polyunsaturated fats, folate, calcium, and iron <u>Negatively-scored components:</u> sugar-sweetened beverages, red and processed meat, trans fat, and sodium	SGA (RR) T1=REF		T2: 0.73 (95% CI: 0.41, 1.31) T3: 0.93 (95% CI: 0.49, 1.75)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		LGA (RR) T1=REF		T2: 0.74 (95% CI: 0.43, 1.26) T3: 0.92 (95% CI: 0.50, 1.69)
		Birth weight (mean difference in z-score units per unit increase in diet score)		0.002 (95% CI: -0.003, 0.008)
	Alternate Mediterranean Diet (aMED) <u>Healthier components:</u> vegetables, legumes, fruits, nuts, whole grains, fish, and the ratio of monounsaturated to saturated fats <u>Less healthy components:</u> red and processed meats	SGA (RR) T1=REF		T2: 0.75 (95% CI: 0.44, 1.29) T3: 0.94 (95% CI: 0.48, 1.81)
		LGA (RR) T1=REF		T2: 0.71 (95% CI: 0.44, 1.14) T3: 0.71 (95% CI: 0.37, 1.35)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Birth weight (mean difference in z-score units per unit increase in diet score)		-0.003 (95% CI: -0.036, 0.031)
Rifas-Shiman, 2009 USA N = 1,777 (first trimester) N = 1,666 (second trimester)	AHEI-P vegetables; fruit; ratio of white to red meat; fiber; <i>trans</i> fat; ratio of polyunsaturated to saturated fatty acids; and folate, calcium, and iron from foods	SGA (OR) AGA=REF		1 st trimester: 0.92 (95% CI: 0.82, 1.02) 2 nd trimester: 1.00 (95% CI: 0.90, 1.10)
		LGA (OR) AGA=REF		1 st trimester: 0.95 (95% CI: 0.89, 1.02) 2 nd trimester: 0.99 (95% CI: 0.92, 1.07)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Rodriguez-Bernal, 2010 Spain N = 787	AHEI-P <u>Positively-scored components:</u> vegetables (5 serv/d); fruit (4 serv/d); nuts and soy (1 serv/d); ratio of white to red meat ($\geq 4:1$); cereal fiber (15g/d); <i>trans</i> fat ($\leq 0.5\%$ of energy); ratio of polyunsaturated to saturated fat (≥ 1); and folate ($\geq 600\text{g/d}$), calcium ($\geq 1000\text{mg/d}$), and iron ($\geq 27\text{mg/d}$) intakes from foods	Fetal growth restriction in weight (OR) Q1=REF	Q3: 0.35 (95% CI: 0.16, 0.76) Q4: 0.51 (95% CI: 0.26, 0.99) Q5: 0.24 (95% CI: 0.10, 0.55)	Q2: 0.55 (95% CI: 0.28, 1.08)
		Birth weight adjusted for gestational age (β) Q1=REF	Q2: 92.69g (95% CI: 3.24, 182.16) Q4: 126.25g (95% CI: 38.53, 213.96) Q5: 114.15g (95% CI: 27.07, 201.23)	Q3: 83.45g (95% CI: -7.53, 174.43)
Shapiro, 2016 USA N = 1,079	Healthy Eating Index-2010 (HEI-2010): <u>Components:</u> total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, fatty acids, refined grains, sodium and empty calories	Birth weight (β) Score >57=REF		Score ≤ 57 : 27.86g (95% CI: -21.16, 76.89)
PCA/Factor Analysis				

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Before Pregnancy				
Grieger, 2014 Australia N = 309	High-protein/fruit pattern	Low birth weight (OR for 1 SD increase in DP score)		0.41 (95% CI: 0.13, 1.33)
	Fish, meat, chicken, fruit, whole grains	SGA (OR for 1 SD increase in DP score)		0.84 (95% CI: 0.55, 1.28)
	High-fat/sugar/takeaway pattern	Low birth weight (OR for 1 SD increase in DP score)		1.39 (95% CI: 0.87, 2.22)
	Takeaway foods, potato chips, refined grains, added sugar	SGA (OR for 1 SD increase in DP score)		1.02 (95% CI: 0.72, 1.46)
	Vegetarian-type pattern	Low birth weight (OR for 1 SD increase in DP score)		0.93 (95% CI: 0.54, 1.62)
	Vegetables, whole grains, legumes	SGA (OR for 1 SD increase in DP score)		1.16 (95% CI: 0.82, 1.64)
Pregnancy				

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Bouwland-Both, 2013 The Netherlands N = 847	Energy-rich pattern <u>High</u> intakes of bread/breakfast cereals, margarine, nuts, snacks/sweets and nonsweetened nonalcoholic beverages; <u>Low</u> intakes of sweetened, nonalcoholic beverages	Crown-rump length	<i>Millimeters:</i> High: 1.62 (95% Ci: 0.52, 2.72)	Millimeters: Intermediate: 0.87 (95% CI: -0.23, 1.96)
		Low=REF	<i>SD score:</i> High: 0.23 (95% Ci: 0.08, 0.38)	SD score: Intermediate: 0.10 (95% CI: -0.05, 0.25)
		Estimated fetal weight (β)		2 nd trimester - SD score: Intermediate: -0.01 (95% CI: -0.15, 0.12)
		Low=REF		High: 0.01 (95% CI: -0.12, 0.15) 3 rd trimester - SD score: Intermediate: 0.11 (95% CI: -0.04, 0.26) High: 0.03 (95% CI: -0.12, 0.18)
		Birth weight (β)		SD score: Intermediate: 0.04 (95% CI: -0.14, 0.22)
		Low=REF		High: 0.10 (95% CI: -0.08, 0.28)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Mediterranean pattern <u>High</u> intakes of vegetables, legumes, pasta/rice, dairy, fish/shellfish, vegetable oils, alcohol, nonsweetened nonalcoholic beverages; <u>Low</u> intakes of processed meat	N/A	N/A	Pattern showed no significant association with crown-rump length and so was not included in the analysis
	Western pattern <u>High</u> intakes of potatoes, pasta/rice, dairy, fresh meat, processed meat, margarine and alcohol; <u>Low</u> intakes of nuts, fish/shellfish	N/A	N/A	Pattern showed no significant association with crown-rump length and so was not included in the analysis
Chia, 2016 Singapore N = 923	Vegetable, fruit, and white rice pattern <u>Higher</u> intakes of vegetables, fruits, plain white rice, whole-grain bread, fish, and nuts and seeds, and <u>Lower</u> intakes of fried potatoes, burgers, carbonated and sweetened drinks, and flavored rice	Birth weight (β per 1-SD increase in dietary pattern score)		29.47g (95% CI: -0.74, 59.67)
		SGA (OR) Low=REF		Higher: 1.03 (95% CI: 0.82, 1.30)
		LGA (OR) Low=REF	Higher: 1.31 (95% CI: 1.06, 1.62)	

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Seafood and noodle pattern <u>Higher</u> intakes of soup, seafood, fish and seafood products, noodles (flavored and in soup), and low-fat red meat, and <u>Lower</u> intakes of legumes, ethnic bread, white rice, and curry-based gravies	Birth weight (β per 1-SD increase in dietary pattern score)		9.68g (95% CI: -22.90, 42.25)
		SGA (OR) Low=REF		Higher: 1.17 (95% CI: 0.92, 1.48)
		LGA (OR) Low=REF		Higher: 1.17 (95% CI: 0.92, 1.47)
	Pasta, cheese, and processed meat pattern High intakes of pasta-, tomato-, and cream-based gravies, cheese, and processed meat	Birth weight (β per 1-SD increase in dietary pattern score)		8.24g (95% CI: -19.12, 35.61)
		SGA (OR) Low=REF		Higher: 1.09 (95% CI: 0.89, 1.33)
		LGA (OR) Low=REF		Higher: 1.18 (95% CI: 0.99, 1.39)
Colón-Ramos, 2015 USA N = 1,151	Healthy pattern High positive loadings for vegetables, fruits, non-fried fish and chicken, and water	Weight-for-length z-score (β) Healthy=REF		REF

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Weight-for-age z-score (β) Healthy=REF		REF
	Processed pattern High positive loadings for processed meat, fast food items, snacks sweets, and soft drinks	Weight-for-length z-score (β) Healthy=REF		0.23 (SE=0.19)
		Weight-for-age z-score (β) Healthy=REF		-0.03 (SE=0.14)
	Southern pattern High positive loadings for cooked cereals, peaches, corn fried fish, beans, greens, pig's feet, neck bones oxtails, tongue, and pork	Weight-for-length z-score (β) Healthy=REF		-0.28 (SE=0.19)
		Weight-for-age z-score (β)		-0.07 (SE=0.14)
	Healthy-Processed pattern Combination of these two DPs above	Weight-for-length z-score (β) Healthy=REF		0.16 (SE=0.16)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Weight-for-age z-score (β) Healthy=REF		0.12 (SE=0.11)
	Healthy-Southern pattern Combination of these two DPs above	Weight-for-length z-score (β) Healthy=REF		0.17 (SE=0.19)
		Weight-for-age z-score (β) Healthy=REF		-0.09 (SE=0.14)
	Southern-Processed pattern Combination of these two DPs above	Weight-for-length z-score (β) Healthy=REF		-0.07 (SE=0.19)
		Weight-for-age z-score (β) Healthy=REF		-0.15 (SE=0.14)
	Mixed pattern Foods from all other patterns together	Weight-for-length z-score (β) Healthy=REF		0.15 (SE=0.14)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Weight-for-age z-score (β) Healthy=REF		-0.01 (SE=0.10)
Knudsen, 2008 Denmark N = 44,612	Western pattern <u>Highest</u> intake of high-fat dairy, refined grains, processed and red meat, animal fat (butter and lard), potatoes, sweets, beer, coffee, and high-energy drinks; <u>Lowest</u> intake of fruits and vegetables (35% of energy intake from fat)	SGA (OR) Western=REF		1.00 (REF)
	Health conscious pattern <u>High</u> intake of fruits, vegetables, fish, poultry, breakfast cereals, vegetable juice, and water; <u>Lowest</u> intake of meat and fat of animal origin (25% of energy intake from fat)	SGA (OR) Western=REF	0.74 (95% CI: 0.64, 0.86)	
	Intermediate pattern <u>High</u> intake of low-fat dairy and fruit juice; Consumption of the remaining food groups in between Western and Health conscious DPs (30% of energy intake from fat)	SGA (OR) Western=REF	0.68 (95% CI: 0.55, 0.84)	

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Lu, 2016 China N = 6,954	Cereals, eggs, and Cantonese soups pattern Highest content of staples such as rice, pasta, porridge, eggs, and Cantonese soups; represents a traditional Cantonese diet	SGA (OR) Cereals, eggs, and Cantonese soups =REF		1.00 (REF)
		LGA (OR) Cereals, eggs, and Cantonese soups =REF		1.00 (REF)
	Dairy pattern Highest content of dairy	SGA (OR) Cereals, eggs, and Cantonese soups =REF		0.87 (95% CI: 0.63, 1.21)
		LGA (OR) Cereals, eggs, and Cantonese soups =REF		1.01 (95% CI: 0.75, 1.35)
	Fruits, nuts, and Cantonese desserts pattern Highest content of fruits, nuts, and Cantonese desserts	SGA (OR) Cereals, eggs, and Cantonese soups =REF		0.76 (95% CI: 0.53, 1.10)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		LGA (OR) Cereals, eggs, and Cantonese soups =REF		1.14 (95% CI: 0.84, 1.54)
	Meats pattern Highest content of red meat and processed meat	SGA (OR) Cereals, eggs, and Cantonese soups =REF		0.95 (95% CI: 0.69, 1.30)
		LGA (OR) Cereals, eggs, and Cantonese soups=REF		0.75 (95% CI: 0.56, 1.02)
	Vegetables pattern Highest content of leafy and cruciferous vegetables	SGA (OR) Cereals, eggs, and Cantonese soups=REF		0.77 (95% CI: 0.56, 1.05)
		LGA (OR) Cereals, eggs, and Cantonese soups=REF		1.03 (95% CI: 0.79, 1.36)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Varied pattern Relatively high intakes of mixed food, including noodles, bread, root vegetables, melon vegetables, mushrooms, sea vegetables, bean vegetables, processed vegetables, poultry, animal organ meat, fish, other seafood, bean products, yoghurt, sweet beverages, puffed food, confectioneries, and snacks	SGA (OR) Cereals, eggs, and Cantonese soups=REF		0.77 (95% CI: 0.57, 1.04)
		LGA (OR) Cereals, eggs, and Cantonese soups=REF		1.10 (95% CI: 0.85, 1.42)
Northstone, 2008 England N = 12,053	Health-conscious pattern High loadings on salad, fruit, rice, pasta, breakfast cereals, fish, eggs, pulses, fruit juices, poultry and non-white bread	Birth weight (β per 1 SD increase in DP score)	39.87g (95% CI: 29.59, 50.16)	
	Traditional pattern High loadings on green vegetables and root vegetables, potatoes, peas and to some extent red meat and poultry	Birth weight (β per 1 SD increase in DP score)		6.63g (95% CI: -3.40, 16.66)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Processed pattern High loadings on high-fat processed foods, such as meat pies, sausages and burgers, fried foods, pizza, chips and crisps	Birth weight (β per 1 SD increase in DP score)	-18.03g (95% CI: -29.74, -6.33)	
	Confectionery pattern High intakes of confectionery and other foods with high sugar content such as chocolate, sweets, biscuits, cakes and other puddings	Birth weight (β per 1 SD increase in DP score)		-1.25g (95% CI: -12.90, 10.41)
	Vegetarian pattern Loaded highly on meat substitutes, pulses, nuts and herbal tea and high negative loadings were seen with red meat and poultry	Birth weight (β per 1 SD increase in DP score)	-15.47g (95% CI: -25.44, -5.50)	
Okubo, 2012 Japan N = 803	Meat and eggs pattern High intake of beef and pork, processed meat, chicken, eggs, butter and dairy products	Birth weight (mean)		3,105g (95% CI: 3,069, 3,141)
		SGA (OR) Rice, fish, and vegetables= REF		4.32 (95% CI: 0.92, 20.3)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Wheat products pattern High intake of bread, confectioneries, fruit and vegetable juice, and soft drinks	Birth weight (mean)	3,073g (95% CI: 3,063, 3,111)* *significantly different than rice, fish, and vegetables pattern	
		SGA (OR) Rice, fish, and vegetables= REF	5.24 (95% CI: 1.13, 24.4)	
	Rice, fish, and vegetables pattern High intake of rice, potatoes, nuts, pulses, fruits, green and yellow vegetables, white vegetables, mushrooms, seaweeds, Japanese and Chinese tea, fish, shellfish, sea products, miso soup and salt-containing seasoning	Birth weight (mean)	3,153g (95% CI: 3,104, 3,203)* *significantly different than wheat products pattern	
		SGA (OR) Rice, fish, and vegetables= REF		1.00 (REF)
Other Method				

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Before Pregnancy/ Before and/or During Pregnancy				
Xie, 2015 USA N = 572	High-calorie sweet pattern Foods such as doughnuts, ice cream, chocolate candy, regular candy, and cookies	Birth weight (β for 1-unit increase in the scale)		0.02 kg (SE= 0.02)
	High-calorie nonsweet pattern Steak, fried chicken, fried fish, pizza, hot dogs, sausage, cheese, whole milk, etc.	Birth weight (β for 1-unit increase in the scale)		-0.004 kg (SE= 0.01)
	Low-calorie pattern Foods such as low-fat and skim milk, grilled chicken, grilled fish, apples, and breakfast cereal	Birth weight (β for 1-unit increase in the scale)		0.03 kg (SE= 0.03)
Pregnancy				
Clapp, 1997 USA N = 12	Aboriginal Carbohydrate Diet (Low-GI) Carbs from unprocessed whole grains, fruits, beans, vegetables, and many dairy products; includes most dense whole grain and multigrain breads, bran cereals, pastas, fresh fruits and vegetables, yogurt, ice cream, and nuts	Birth weight (mean \pm SEM)	3.27 \pm 0.12 kg* *significantly different than cafeteria carbohydrate diet	

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Cafeteria Carbohydrate Diet (High-GI) Carbs from highly processed grains, root vegetables, and simple sugars; includes many highly refined breads, potatoes, instant rice, most breakfast cereals, desserts, and snack-type foods	Birth weight (mean \pm SEM)	4.25 \pm 0.11 kg* *significantly different than aboriginal carbohydrate diet +	

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Khoury, 2005 Norway N = 290	Intervention diet Dietician encouraged the intake of fatty fish, vegetable oils, especially olive oil and rapeseed oil, nuts, nut butters, margarine based on olive- or rapeseed oil, and avocado to replace meat, butter, cream, and fatty dairy products; the consumption of fresh fruits and vegetables was advised (at least 6 a day); intake of dairy products in the form of skimmed or low-fat products (skimmed milk, fat-reduced cheese, and yogurt) in place of full fat products was encouraged; subjects were advised to choose meat for a main meal twice a week and use legumes, vegetable main dishes, fatty fish, or poultry with the fat trimmed off on the other days; coffee was limited to 2 cups of filtered coffee a day - included significantly more fish and fish products; fatty fish and fish products; rapeseed-based margarine; oils; olive oil; rapeseed oil; nuts, olives, and seeds; vegetables; and fruits when compared to the control diet <i>See below for control diet description</i>	Birth weight		Mean difference: 42.9g (95% CI: -89.3, 175) Control: 3542g \pm 647 Intervention: 3579g \pm 649

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	<i>Continued from above</i> Control diet Subjects asked to consume their usual diet based on Norwegian foodstuffs, and not to introduce more oils or low-fat meat and dairy products than usual - included significantly more fatty milk, meat and meat products, fatty minced meat, butter, and hard margarines when compared to the intervention diet	Birth weight (excluding subjects who gave birth before week 37)		Mean difference: NR (95% CI: NR; P = .2) Control: 3664g ± 480 Intervention: 3596g ± 474
	Control diet vs Intervention diet	Intrauterine growth restriction (OR) Control=REF		Intervention: 1.0 (95% CI: 0.4, 2.5)
Timmermans, 2012 The Netherlands N = 3,207	Mediterranean diet Higher intakes of pasta, rice, vegetable oils, fish, vegetables and alcohol, and lower intakes of meat, potatoes and fatty sauces ($r \geq 0.20$)	Resistance index uterine artery (β) High=REF		Medium: 0.02 (95% CI: -0.00, 0.03) Low: 0.01 (95% CI: -0.00, 0.03)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Head circumference standard deviation score (β) High=REF		Mid-pregnancy: Medium: 0.01 (95% CI: -0.08, 0.10) Low: 0.01 (95% CI: -0.09, 0.10) Late-pregnancy: Medium: -0.03 (95% CI: -0.12, 0.05) Low: -0.08 (95% CI: -0.17, 0.01)
		Abdominal circumference standard deviation score (β) High=REF	<i>Late-pregnancy:</i> Low: -0.16 (95% CI: -0.25, - 0.07)	Mid-pregnancy: Medium: -0.03 (95% CI: -0.12, 0.06) Low: -0.05 (95% CI: -0.14, 0.04) Late-pregnancy: Medium: -0.06 (95% CI: -0.15, 0.03)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Femur length standard deviation score (β) High=REF		Mid-pregnancy: Medium: 0.02 (95% CI:-0.06, 0.11) Low: 0.07 (95% CI: -0.02, 0.16) Late-pregnancy: Medium: 0.00 (95% CI:-0.08, 0.08) Low: 0.01 (95% CI: -0.08, 0.09)
		Estimated fetal weight standard deviation score (β) High=REF	<i>Mid-pregnancy:</i> Low: -0.01 (95% CI: -0.09, - 0.08) <i>Late-pregnancy:</i> Low: -0.11 (95% CI: -0.20, - 0.02)	Mid-pregnancy: Medium: 0.08 (95% CI:-0.08, 0.09) Late-pregnancy: Medium: -0.07 (95% CI:-0.16, 0.02)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Birth weight (β) High=REF	Medium: -58.0g (95% CI: -95.8, -20.3) Difference in SDS: -0.16 (95% CI: -0.24, -0.07) Low: -72.0g (95% CI: -110.8, -33.3) Difference in SDS: -0.21 (95% CI: -0.30, -0.12)	

Assessment of the body of evidence

A grade was not assignable for this body of evidence. The individual grading elements are discussed below.

Internal validity (determined with the NEL Bias Assessment Tool):

- Study Design: The data were primarily observational in nature, making it difficult to determine causal effect of the dietary patterns. Further, the characteristics of the study participants were also heterogeneous.
- Exposure:
 - Data were primarily self-reported, thus possibly affecting the validity of the data collected.
 - Studies used a variety of tools to measure participants' dietary intake:
 - Food frequency questionnaires (FFQ) were the primary measurement tool. A few of the FFQ used were neither validated (15, 17, 18) nor assessed for reliability, and the type of FFQ used varied between studies.
 - Some studies used other methods, including diet history questionnaires (6, 10), 24-hr recall (10), a 3-day food diary (11) and dietary recall (17).
 - When the subjects were randomized to a particular diet, compliance was assessed periodically (1, 21).
 - Furthermore, the methods used to create dietary patterns were heterogeneous.
- Timing:
 - Variation in the timing of exposure assessment and the duration of recall periods across studies makes it difficult to draw conclusions for the entire periods before and during pregnancy.
 - Grieger et al. exclusively assessed maternal diet before pregnancy.
 - Monteagudo et al., Gresham et al. and Xie et al. measured diet during a wide window spanning from before pregnancy to the end of pregnancy, and they did not delineate their findings based on timing (before pregnancy vs. during pregnancy).
 - Rodriguez-Bernal et al., Bouwland-Both et al. and Timmermans et al. assessed diet during the first trimester, with the recall period spanning from conception until the point of measurement.
 - Hillesund et al., Chia et al., Colon-Ramos et al., Knudsen et al., and Lu et al. all measured maternal diet during the second trimester (with variable time periods of recall).
 - Northstone et al. measured diet during the third trimester and captured current consumption.
 - Several studies assessed diet across trimesters, which included varied recall periods.
- Confounders:
 - Key confounders (parity, educational attainment, smoking status, race/ethnicity, maternal age, family poverty income ratio, pre-pregnancy BMI, mean total energy intake, and hypertensive disorders of pregnancy) were not consistently accounted for across studies. This limits the internal validity of study findings.

- Six studies did not adjust for pre-pregnancy BMI, two of which were RCTs. Khoury et al. noted that pre-pregnancy BMI did not differ between intervention and control diet groups, whereas Clapp did not compare pre-pregnancy BMI across groups.
 - Furthermore, only six of 21 studies adjusted for maternal energy intake, a key confounder in the association between dietary patterns and birth weight outcomes.
- None of the studies included in this review assessed effect measure modification between dietary patterns and maternal pre-pregnancy BMI in the context of birth weight outcomes. Failing to examine these potential interactions could have prevented these studies from observing associations.
- Outcome:
 - Outcomes were assessed in a variety of ways across studies included in this review.
 - Just one-third of studies (n=7) used both gestational age- and sex-specific cut-off values when defining SGA, AGA, LGA and IUGR (1, 5, 6, 11, 13, 14, 16).
 - Twelve studies reported birth weight adjusted for gestational age as an outcome (1, 5-9, 11-14, 16, 20).
 - Nine studies reported birth weight, alone, without standardizing for gestational age or sex or using z-scores (2-4, 10, 15, 17-19, 21).
 - Four studies included subjects born at a specified gestational age:
 - Hillesund (≥ 37 to ≤ 42 weeks)
 - Poon (≥ 35 to ≤ 43.5 weeks)
 - Shapiro (≥ 32 weeks)
 - Okubo (≥ 37 to ≤ 41 weeks)
 - The use of birth weight values unadjusted for infant sex or gestational age at delivery in many of these studies makes these data difficult to interpret.

Consistency:

- There was heterogeneity in study findings in this body of evidence. Some studies found an association between dietary patterns and birth weight outcomes (n = 11), while others did not (n=10). This varied by the specific measure of size at birth that was used in each study.
- Small- or large-for-gestational age:
 - Five of the 12 studies showed an association between dietary patterns and SGA (5, 7, 8, 13, 16).
 - Two of the six studies noted that a greater adherence to a dietary pattern (specifically, the New Nordic Diet and a vegetable, fruit and white rice pattern) was associated with an increased risk of LGA (5, 11).
Monteagudo et al. observed that a higher Mediterranean diet score was predictive of newborn overweight (>3,500 g) when compared to newborn underweight (<2,500g); however, the birth weight was not standardized for gestational age or z-score.
 - Monteagudo et al. findings may be explained in part by their structuring of the outcome as the likelihood of overweight *versus* underweight as the reference group. This likely contributed to their

large observed effect size.

- Birth weight:
 - Birth weight standardized for gestational age was reported in three studies (8, 9, 12), of which only Rodriguez-Bernal et al. reported a positive association with the birth weight.
 - Crude birth weight, without standardizing for gestational age or sex (i.e., using percentiles or z-scores), was reported in 9 studies. Of these, four showed that adherence to a healthy dietary pattern was associated with birth weight (2, 7, 15, 21). Among studies that reported low birth weight as an outcome (n=3), none showed an association with maternal dietary patterns (4, 18, 20).
 - The mean birth weight for included studies was above 3,000 g (range: 3,103 g (16) to ~3,760 g (21)), indicating that babies were born at a healthy weight, overall. This may explain why many studies did not detect an association between healthier dietary patterns and increased birth weight.
- Dietary patterns were associated with other outcomes such as crown-rump length (3), estimated fetal weight during mid- and late-pregnancy and late-pregnancy abdominal circumference (2), but there was no association with other fetal measures (head circumference, femur length) or weight for length z-score.

Impact:

- Most of the studies in the body of evidence directly examined the relationship between different dietary patterns or different levels of adherence to a dietary pattern and birth weight. However, there were a few exceptions. First, the RCT by Khoury et al. assessed IUGR and birth weight as secondary outcomes. The primary study was focused on understanding the relationship between a cholesterol-lowering diet during pregnancy and maternal, cord, and neonatal cholesterol levels (1). Second, Shapiro et al. was designed to assess the association between maternal diet and neonatal adiposity, with birth weight as a secondary outcome.
- The lack of consistency across studies limits the practical/clinical significance of this review.

Adequacy:

- A substantial number of studies were included in this review. The evidence base included 21 studies comprising 2 RCTs, 18 prospective cohort studies, and 1 retrospective cohort study.
- Most of the studies were conducted by independent research groups. The only exception was Timmermans et al. and Bouwland-Both et al., who both used data from the Generation R study and also had overlapping authorship.
- Sample sizes varied from 12 subjects to 66,597 subjects. The median sample size was 1,079. None of the studies reported power calculations. A few studies (1, 17, 19-21) had lower sample sizes, which might have limited their ability to detect significant differences had such differences been present.

Generalizability:

- There are serious limitations to the generalizability of these findings.

- Only seven out of 21 studies were conducted in the U.S.
- Adolescent, minority, and lower-SES populations are underrepresented in the body of evidence. Only one study was conducted primarily in adolescent girls (17).
- It is unknown if the findings would apply to more diverse samples before and during pregnancy.

Other limitations/considerations:

Many of the studies did not use a standardized outcome measure (such as SGA, LGA, or gestational age- and sex-specific birth weight). Even among those that used a standardized measure, there was heterogeneity in how it was defined. Some studies used observed distributions of fetal size that are standardized for gestational age and sex in a defined population. Meanwhile, others used observed distributions that were customized based on maternal characteristics (e.g. maternal parity, height, ethnicity) or standards derived from a healthy population selected to reflect optimal growth³⁷.

As discussed above, none of the studies assessed effect measure modification between dietary patterns and maternal pre-pregnancy BMI in the context of birth weight outcomes and only a limited number of studies (n=6) adjusted for mean total energy intake. These limitations could have possibly influenced the study findings.

Many different methods (sometimes using the same nomenclature) were used to define and assess dietary patterns, making it difficult to compare or contrast results across studies. Journal editors and peer-reviewers may be less willing to publish studies that replicate others' findings, which could have resulted in an evidence base with a wide array of dietary patterns. It is important for the editors and peer-reviewers to understand the need for publishing studies that replicate dietary patterns, in addition to publishing studies that assess unique dietary patterns.³⁸

Research recommendations

To assess the relationship between dietary patterns before and during pregnancy and birth weight outcomes more adequately, additional research is needed that should:

- Include diverse populations from the U.S. and elsewhere with varying age groups (including adolescents) and different racial/ethnic and socioeconomic backgrounds.
- Assess effect measure modification by pre-pregnancy BMI and gestational weight gain.
- Use a standardized birth size measure (such as one developed by the INTERGROWTH-21st project) that would enable valid comparisons between and within countries³⁹.
- Include well-designed and sufficiently powered RCTs.
- Foster collaborative efforts across different regions and populations so that

³⁷ Westerway, S. C., Papageorgiou, A. T., Hirst, J., Costa, F. D., Hyett, J., & Walker, S. P. (2015). INTERGROWTH-21st - Time to standardise fetal measurement in Australia. *Australas J Ultrasound Med*, 18(3), 91-95. doi:10.1002/j.2205-0140.2015.tb00206.x

³⁸ U.S. Department of Health and Human Services and U.S. Department of Agriculture. (2015). 2015 – 2020 Dietary Guidelines for Americans. 8th Edition. Retrieved from <https://health.gov/dietaryguidelines/2015/guidelines/>.

³⁹ Westerway, S. C., Papageorgiou, A. T., Hirst, J., Costa, F. D., Hyett, J., & Walker, S. P. (2015). INTERGROWTH-21st - Time to standardise fetal measurement in Australia. *Australas J Ultrasound Med*, 18(3), 91-95. doi:10.1002/j.2205-0140.2015.tb00206.x

dietary patterns can be more consistently scored, compared and reproduced across studies.

- Develop and validate novel epidemiological tools that can accurately capture the complexity of dietary habits.
- Promote harmonization of research methods across various cohorts and randomized trials, similar to the National Cancer Institute's Dietary Patterns Methods Project⁴⁰.
- Adjust for key confounding factors in observational studies, including parity, educational attainment, smoking status, race/ethnicity, maternal age, family poverty income ratio, pre-pregnancy BMI, mean total energy intake and gestational weight gain.

⁴⁰ Liese, A. D., Krebs-Smith, S. M., Subar, A. F., George, S. M., Harmon, B. E., Neuhouser, M. L., . . . Reedy, J. (2015). The Dietary Patterns Methods Project: synthesis of findings across cohorts and relevance to dietary guidance. *J Nutr*, 145(3), 393-402. doi:10.3945/jn.114.205336

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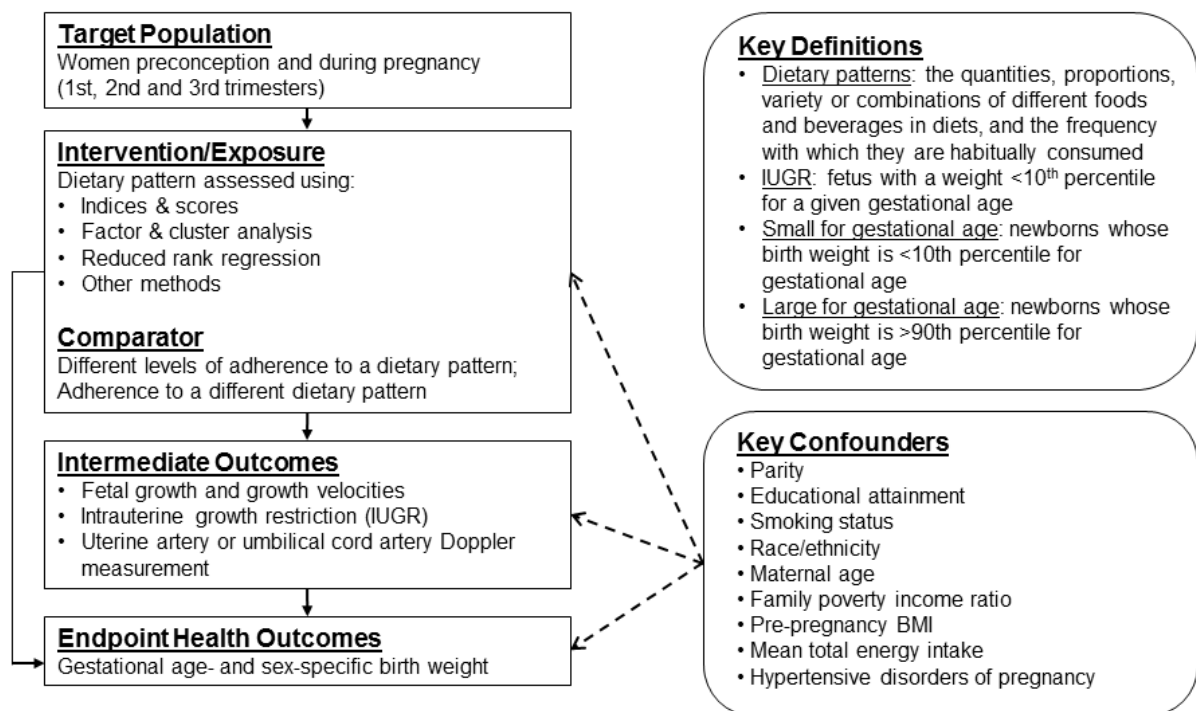
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20. Grieger JA, Grzeskowiak LE, Clifton VL. Preconception dietary patterns in human pregnancies are associated with preterm delivery. *J Nutr* 2014;144(7):1075-80.
21. Clapp JF. Diet, exercise, and feto-placental growth. *Archives of Gynecology and Obstetrics* 1997;260(1-4):101-8.

ERROR! REFERENCE SOURCE NOT FOUND.

The analytic framework (Figure 1) illustrates the overall scope of the project, including the population, the interventions and/or exposures, comparators, and outcomes of interest. It also includes definitions of key terms and identifies key confounders considered in the systematic review. This is the analytic framework for the systematic review conducted to examine the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight.

Figure 1: Analytic framework

Analytic Framework: What is the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight?



SEARCH PLAN AND RESULTS

Inclusion and exclusion criteria

This table provides the inclusion and exclusion criteria for the systematic review question: what is the relationship between dietary patterns before and during pregnancy and gestational age- and sex-adjusted birth weight. The inclusion and exclusion criteria are a set of characteristics to determine which studies will be included or excluded in the systematic review.

Table 7. Inclusion and exclusion criteria

Category	Inclusion Criteria	Exclusion Criteria
Study Design	<ul style="list-style-type: none"> • Randomized controlled trials • Prospective cohort studies • Retrospective cohort studies • Nested case-control studies 	<ul style="list-style-type: none"> • Non-randomized controlled trials • Cross-sectional studies • Case-control studies • Uncontrolled studies • Pre/post studies with a control • Pre/post studies without a control • Narrative reviews • Systematic reviews • Meta-analyses
Exposure/ Intervention	<ul style="list-style-type: none"> • Studies that provide a description of the dietary pattern(s) (i.e., foods and beverages) consumed by subjects and that methodologically use: <ul style="list-style-type: none"> ○ Indices & scores ○ Cluster or factor analysis ○ Reduced rank regression ○ Other methods 	<ul style="list-style-type: none"> • Studies that <u>do not</u> provide a description of the dietary pattern(s) (i.e., foods and beverages) consumed by subjects⁴¹
Comparator	<ul style="list-style-type: none"> • Different levels of adherence to a dietary pattern • Adherence to a different dietary pattern 	

⁴¹ For example, a study would be excluded from the systematic review if the dietary pattern were labeled “vegetarian” but lacked a description of what foods/beverages were consumed as part of that dietary pattern.

Category	Inclusion Criteria	Exclusion Criteria
Date Range	<ul style="list-style-type: none"> Studies published in the following date range: 1980-present (search date) 	No exclusion criteria for date range
Language	<ul style="list-style-type: none"> Studies published in English 	<ul style="list-style-type: none"> Studies published in languages other than English
Study Setting	<ul style="list-style-type: none"> Studies conducted in Very High and High Human Development Countries* <p><i>*Determined using the most recent Human Development Index</i></p>	<ul style="list-style-type: none"> Studies conducted in Medium and Low Human Development Countries* <p><i>*Determined using the most recent Human Development Index</i></p>
Study Duration	<ul style="list-style-type: none"> Studies regardless of length 	<ul style="list-style-type: none">
Temporality	<ul style="list-style-type: none"> Studies when the exposure was assessed prior to the outcome 	<ul style="list-style-type: none"> Studies when the outcome was assessed prior to the exposure
Publication Status	<ul style="list-style-type: none"> Studies published in peer-reviewed journals 	<ul style="list-style-type: none"> Grey literature, including unpublished data, manuscripts, reports, abstracts, conference proceedings
Study Subjects	<ul style="list-style-type: none"> Human subjects Adolescent girls and women capable of becoming pregnant (15-44 years) Pregnant girls and women (15-44 years) – single and multiple pregnancies Neonates 	<ul style="list-style-type: none"> Animal and in vitro models Hospitalized patients, when hospitalization is not related to pregnancy, birth and immediate postpartum Pregnancies conceived ONLY using Assisted Reproductive Technologies
Size of Study Groups	<ul style="list-style-type: none"> Studies regardless of group size 	<ul style="list-style-type: none">

Category	Inclusion Criteria	Exclusion Criteria
Health Status of Study Subjects	<ul style="list-style-type: none"> Studies conducted in generally healthy women of reproductive age, including women in pre/periconception and pregnancy Studies conducted in samples with elevated chronic disease risk or pregnancy related conditions, or that enroll <i>some</i> subjects with a disease or with health outcome of interest such as <ul style="list-style-type: none"> Anemia Gestational diabetes Hypertension Preeclampsia Hyperemesis Gravidarum Previous adverse outcome (e.g., preterm) Obesity 	<ul style="list-style-type: none"> Studies that <i>exclusively</i> enroll subjects with chronic conditions (e.g. hypertension, diabetes) that are not related to the index pregnancy Studies that <i>exclusively</i> enroll subjects with a disease or with the health outcome of interest (intermediate or endpoint health outcomes) Studies done in hospitalized or malnourished subjects, if hospitalization is not related to index pregnancy
Outcomes	<ul style="list-style-type: none"> Gestational age- and sex-specific birth weight Intermediate Outcomes: <ul style="list-style-type: none"> Fetal growth and growth velocities Intrauterine growth restriction (IUGR) Uterine artery or umbilical cord artery Doppler measurement 	

Search terms and electronic databases used

PubMed, US National Library of Medicine

- Date(s) searched: January 1980 to January 2017
- Search Terms:

pregnancy[mh] OR "Prenatal Exposure Delayed Effects"[mesh] OR "Maternal Exposure"[mesh] OR "pregnant women"[mh] OR pregnan*[tiab] OR prenatal[tiab] OR maternal OR mother* OR postpartum OR newborn*[tiab] OR perinatal OR peri-natal OR pre-conception OR preconception OR periconception OR periconception OR "Infant, Newborn"[Mesh] OR neonat*[tiab] OR newly born* OR "Peripartum Period"[Mesh] OR peripartum[tiab] OR peripartum[tiab] OR gestation* OR natal OR puerperium[tiab] OR "Maternal Nutritional Physiological Phenomena"[Mesh]

AND

hypertensi*[tiab] OR "Hypertension"[Mesh:NoExp] OR vomit* OR diabetes*[tiab] OR diabetic*[tiab] OR "Birth Weight"[Mesh] OR "Birth Weight"[tiab] OR "Glucose Intolerance"[Mesh] OR Glucose Intoleran*[tiab] OR glucose toleran* OR "Insulin Resistance"[Mesh] OR Insulin Resistan*[tiab] OR Dysglycemia[tiab] OR fasting blood glucose* OR "Hemoglobin A, Glycosylated"[Mesh] OR "Proteinuria"[Mesh:noexp] OR Albuminuria OR "Blood Pressure"[mh] OR "blood pressure"[tiab]

OR

"Diabetes, Gestational"[Mesh] OR (gestation*[tiab] AND (diabetes*[tiab] OR diabetic*[tiab])) OR "Pre-Eclampsia"[Mesh] OR "Pre-Eclampsia"[tiab] OR preeclampsia[tiab] OR "Hypertension, Pregnancy-Induced"[Mesh] OR Eclampsia OR "Gestational Age"[Mesh] OR "Morning Sickness"[Mesh] OR (Hyperemesis Gravidarum) OR "Gestational Age"[tiab] OR "Obstetric Labor, Premature"[Mesh] OR ((prematu*[tiab] OR preterm [tiab]) AND (baby[tiab] OR infant*[tiab] OR birth OR labor OR membrane* OR babies)) OR "Fetal Growth Retardation"[Mesh] OR IUGR[tiab] OR "Intrauterine growth restriction" OR "Fetal Development"[Mesh:noexp] OR "Fetal Weight"[Mesh] OR "Umbilical Arteries"[Mesh] OR "Uterine Artery"[Mesh]

AND

("diet quality" OR dietary pattern* OR diet pattern* OR eating pattern* OR food pattern* OR eating habit* OR dietary habit* OR food habit* OR dietary profile* OR food profile* OR diet profile* OR eating profile* OR dietary guideline* OR dietary recommendation* OR eating style*) OR

(DASH[ti] OR DASH[tw] OR ("dietary approaches"[ti] AND hypertension[ti]) OR "Diet, Mediterranean"[Mesh] OR Mediterranean[ti] OR vegan* OR vegetarian* OR "Diet, Vegetarian"[Mesh] OR "prudent diet" OR "western diet" OR nordiet OR omni[ti] OR omniheart[tiab] OR (Optimal Macronutrient Intake Trial to Prevent Heart Disease) OR adventist* OR ((Okinawa* OR "Ethnic Groups"[Mesh] OR "plant based" OR Mediterranean[tiab] OR Nordic[tiab] OR "heart healthy"[tiab] OR indo-mediterranean) AND (diet[mh] OR diet[tiab] OR diets[tiab] OR

food[mh])))) OR

("Guideline Adherence"[Mesh] AND (diet OR food OR eating OR eat OR dietary OR feeding OR nutrition OR nutrient*)) OR (adherence AND (nutrient* OR nutrition OR diet OR dietary OR food OR eat OR eating) AND (guideline* OR guidance OR recommendation*)) OR

(dietary score* OR adequacy index* OR kidmed OR Diet Quality Index* OR Food Score* OR Diet Score* OR MedDietScore OR Dietary Pattern Score* OR "healthy eating index") OR

((index*[ti] OR score*[ti] OR indexes OR scoring[ti] OR indices[ti]) AND (dietary[ti] OR nutrient*[ti] OR eating[tiab] OR food[ti] OR food[mh] OR diet[ti] OR diet[mh]) AND (pattern* OR habit* OR profile*)) OR meals[mh] OR meals[tiab] OR meal[tiab] OR mealtime*[tiab]

OR

diet[mh:noexp] OR diet[ti] OR diets[ti] OR food*[tiab] OR "Food"[mh:noexp] OR "Eating"[mh] OR dietary intake*[tiab] OR food intake*[tiab] OR food habits[mh] OR diet habit*[tiab] OR eating habit*[tiab] OR food choice*[tiab] OR dietary choice*[tiab] OR dietary change*[tiab] NOT (editorial[ptyp] OR comment[ptyp] OR news[ptyp] OR letter[ptyp] OR review[ptyp] OR systematic[sb])

Embase, Elsevier

- Date(s) searched: January 1980 to January 2017
- Search Terms:

'pregnancy'/exp OR 'pregnant woman'/exp OR 'prenatal period'/exp OR 'mother'/exp OR 'prenatal exposure'/exp OR 'prenatal growth'/exp OR 'puerperium'/exp OR 'newborn'/exp OR prematurity/exp OR pregnan*:ti,ab OR maternal:ti,ab OR mother*:ti,ab OR prenatal:ti,ab OR pre-natal:ti,ab OR 'puerperium':ti,ab OR postpartum:ti,ab OR newborn:ti,ab OR neonat*:ti,ab OR "newly born":ti,ab OR periconception:ti,ab OR peri-conception:ti,ab OR pre-conception:ti,ab OR preconception;ti,ab OR gestation* OR peripartum:ti,ab OR peri-partum:ti,ab OR natal:ti,ab OR gestation* OR 'perinatal development'/exp OR 'perinatal care'/de OR perinatal:ti,ab OR peri-natal:ti,ab OR 'puerperium'/de OR 'puerperium':ti,ab OR 'maternal nutrition'/exp

AND

hypertensi* OR hyperemesis:ti,ab OR vomit*:ti,ab OR diabet* OR 'birth weight'/exp OR birthweight:ti,ab OR ((neonatal OR newborn) NEAR/3 weight)

OR

'glucose intolerance'/exp OR (Glucose NEAR/2 Intoleran*) OR (glucose NEAR/2 toleran*) OR 'insulin resistance'/exp OR (Insulin NEAR/1 Resistan*):ti,ab OR Dysglycemia OR "fasting blood glucose" OR 'hemoglobin A1c'/exp OR 'hemoglobin A1c' OR 'proteinuria'/exp OR albuminuria OR "Blood Pressure"/de

OR

'pregnancy diabetes mellitus'/exp OR "diabetes mellitus gravidarum":ti,ab OR

'eclampsia OR preeclampsia'/exp OR eclampsia:ti,ab OR preeclampsia:ti,ab OR pre-eclampsia:ti,ab OR 'maternal hypertension'/exp OR 'gestational age'/exp OR 'small for date infant'/exp OR 'gestational age' OR 'hyperemesis gravidarum'/exp OR 'morning sickness'/exp OR (gestation* NEAR/2 diabet*):ti,ab OR (Obstetric NEAR/3 (Labor OR labour)) OR (labor/exp AND obstetric*) OR 'prematurity'/exp OR ((prematur* OR preterm) NEAR/3 (baby OR infant* OR babies OR birth OR childbirth OR labor OR membrane*)) OR 'intrauterine growth retardation'/de OR IUGR:ti,ab OR "Intrauterine growth restriction" OR 'fetus growth'/exp OR 'fetus development'/exp OR 'fetus weight'/exp OR 'umbilical artery'/exp OR 'uterine artery'/exp OR ((fetal OR fetus OR foetal OR foetus OR embryo*) NEAR/3 (weight OR develop* OR growth)):ti,ab

AND

'eating habit'/exp OR 'Mediterranean diet'/exp OR nordiet:ti,ab OR 'nordic diet':ti,ab OR DASH:ti,ab OR 'dietary approaches to stop hypertension':ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR 'vegetarian diet'/exp OR 'vegetarian'/exp OR 'prudent diet':ti,ab OR 'western diet':ti,ab OR 'Western diet'/exp OR meal/de OR omniheart:ti,ab OR omni:ti OR 'plant based diet' OR ((eating OR food OR diet* OR kalori*) NEAR/3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality)) OR ((ethnic, racial and religious groups'/exp OR Okinawa* OR adventist* OR 'mediterranean') AND (diet/exp OR eating/exp OR 'food intake'/de OR kalori* OR diet* OR food OR eating))

OR

Diet/de OR 'dietary intake'/de OR 'food preference'/de OR 'food intake'/de OR 'diet restriction'/exp OR 'eating habit'/exp OR diet*:ti OR kidmed:ab,ti OR 'meddietscore':ab,ti OR 'healthy eating index':ab,ti OR ((index OR score OR scoring OR indices) NEAR/3 (diet* OR eating OR food)) OR "food consumption"

OR

food*:ti,ab OR "Food"/de OR Eating:ti,ab OR (dietary NEAR/1 change*):ti,ab OR Meal*:ti,ab

Cochrane Central Register of Controlled Trials, John Wiley & Sons

- Date(s) searched: January 1980 to January 2017
- Search Terms:

[mh pregnancy] OR [mh "Maternal Exposure"] OR [mh "Prenatal Exposure Delayed Effects"] OR [mh "pregnant women"] OR pregnan*:ti,ab OR prenatal OR maternal OR mother* OR postpartum OR newborn*:ti,ab OR perinatal OR perinatal OR pre-conception OR preconception OR peri-conception OR periconception OR [mh "Infant, Newborn"] OR neonat*:ti,ab OR (newly NEAR/1 born*) OR gestation* OR peripartum OR peri-partum OR natal:ti,ab OR puerperium OR gravidarum OR [mh "Peripartum Period"] OR peripartum:ti,ab OR peri-partum:ti,ab OR natal OR puerperium:ti,ab OR [mh "Maternal Nutritional

Physiological Phenomena"]

AND

(hypertensi*:ti,ab OR [mh ^Hypertension] OR vomit*:ti,ab OR diabet*:ti,ab OR [mh "Birth Weight"] OR "Birth Weight":ti,ab OR [mh "Glucose Intolerance"] OR (Glucose NEAR/1 Intoleran*) OR (glucose NEAR/1 toleran*) OR [mh "Insulin Resistance"] OR (Insulin NEAR/1 Resistan*:ti,ab) OR Dysglycemia:ti,ab OR "fasting blood glucose" OR [mh "Hemoglobin A, Glycosylated"] OR [mh ^"Proteinuria"] OR Albuminuria OR [mh "Blood Pressure"] OR "blood pressure":ti,ab)

OR

[mh "Diabetes, Gestational"] OR (gestation* NEAR/1 diabet*) OR [mh "Pre-Eclampsia"] OR "Pre-Eclampsia":ti,ab OR preeclampsia:ti,ab OR [mh "Hypertension, Pregnancy-Induced"] OR Eclampsia OR [mh "Gestational Age"] OR [mh "Morning Sickness"] OR (Hyperemesis NEAR/3 Gravidarum) OR "Gestational Age":ti,ab OR [mh "Birth Weight"] OR "Birth Weight":ti,ab OR ((neonatal OR newborn) NEAR/3 weight) OR [mh "Obstetric Labor, Premature"] OR ((prematur*:ti,ab OR preterm:ti,ab) AND (baby:ti,ab OR infant*:ti,ab OR birth OR labor OR membrane* OR babies)) OR [mh "Fetal Growth Retardation"] OR IUGR:ti,ab OR "Intrauterine growth restriction" OR [mh ^"Fetal Development"] OR [mh "Fetal Weight"] OR [mh "Umbilical Arteries"] OR [mh "Uterine Artery"]

AND (diet:ti OR diets:ti OR dietary:ti OR meal*:ti,ab OR "prudent diet" OR nordiet:ti,ab OR omniheart OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR ((Index OR score OR indices OR scoring) NEAR/3 (dietary OR diet OR food OR eating)) OR "adequacy index" OR kidmed OR MedDietScore)

OR 'dietary approaches to stop hypertension':ti,ab OR omniheart:ti,ab OR omni:ti OR 'plant based diet' OR ((eating OR food OR diet* OR kalori*) NEAR/3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality))

OR

food*:ti,ab OR Eating:ti,ab OR (dietary NEAR/1 change*):ti,ab OR DASH:ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR omni:ti OR ((ethni* OR racial OR religio* OR asia* OR western OR Okinawa* OR adventist* OR 'mediterranean' OR Nordic* OR indo-mediterranean) NEAR/3 (calori* OR diet* OR food OR eating))

OR [mh "Diet, Mediterranean"] OR [mh "Diet, Vegetarian"] OR ([mh "Ethnic Groups"] AND ([mh diet] OR diet*:ti,ab OR [mh ^food] OR eat:ti,ab OR eating:ti,ab OR [mh "Eating"] OR [mh "food habits"]))) OR

([mh "Guideline Adherence"] AND (diet OR food OR eating OR eat OR dietary)) OR ((adhere* OR adhering) AND (diet OR dietary OR food OR eat OR eating) AND (guideline* OR guidance OR recommendation*)) OR

[mh meals] OR [mh ^diet] OR diet*:ti,ab OR [mh ^"Food"] OR [mh "Eating"] OR [mh "food habits"]

CINAHL (Plus) with Full Text, EBSCO (Cumulative Index to Nursing and Allied Health Literature)

- Date(s) searched: January 1980 to January 2017
- Search Terms:

(MH "Food and Beverages") OR (MH "Food") OR (MH "Diet") OR (MH "Eating") OR (MH "Eating Behavior") OR (MH "Meals+") OR (MH "Food Preferences") OR (MH "Food Habits") OR (MH "Mediterranean Diet") OR (MH "Diet, Western") OR (MH "DASH Diet") OR (MH "Vegetarianism")

OR meal* OR "prudent diet" OR nordiet OR omniheart OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR ((Index OR score OR indices OR scoring) N3 (dietary OR diet OR food OR eating)) OR "adequacy index" OR kidmed OR MedDietScore

OR "dietary approaches to stop hypertension" OR "plant based diet" OR ((eating OR food* OR diet* OR kalori*) N3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality))

OR

(dietary NEAR/1 change*) OR vegan* OR vegetarian* OR ((ethni* OR racial OR religio* OR asia* OR western OR Okinawa* OR adventist* OR 'mediterranean' OR Nordic* OR indo-mediterranean OR omni*) N3 (calori* OR diet* OR food OR eating))

OR (MH "Ethnic Groups+") AND ((mh diet) OR diet* OR (MH food) OR eat OR eating OR (MH "Eating") OR MH "food habits")) OR

((adhere* OR adhering) N3 (diet OR dietary OR food OR eat OR eating)) AND (guideline* OR guidance OR recommendation*)

(MH "Maternal Nutritional Physiology+") OR (MH "Maternal Exposure") OR (MH "Pregnancy+") OR (MH "Pregnancy in Adolescence+") OR (MH "Maternal Age 14 and Under") OR (MH "Pregnancy Outcomes") OR (MH "Mothers+") OR (MH "Prenatal Nutritional Physiology") OR (MH "Infant, Newborn+") OR (MH "Postnatal Period+") OR (MH "Periconceptual Period")

AND

(MH "Hypertension+") OR (MH "Nausea and Vomiting+") OR (MH "Vomiting+") OR (MH "Birth Weight") OR (MH "Glucose Tolerance Test") OR (MH "Prediabetic State") OR (MH "Glucose Intolerance") OR (MH "Insulin Resistance+") OR (MH "Blood Pressure+") OR (MH "Proteinuria+") OR (MH "Hemoglobin A, Glycosylated")

OR

(MH "Diabetes Mellitus, Gestational") OR (MH "Gestational Age") OR (MH "Pre-Eclampsia+") OR (MH "Eclampsia+") OR (MH "Fetal Growth Retardation") OR (MH "Fetal Weight") OR (MH "Umbilical Arteries") OR (MH "Delivery, Obstetric+")

Limiters - Published Date: 19800101-; Peer Reviewed; English Language;

Exclude MEDLINE records; Pregnancy

Narrow by SubjectMajor: - energy intake

Narrow by SubjectMajor: - vegetarianism

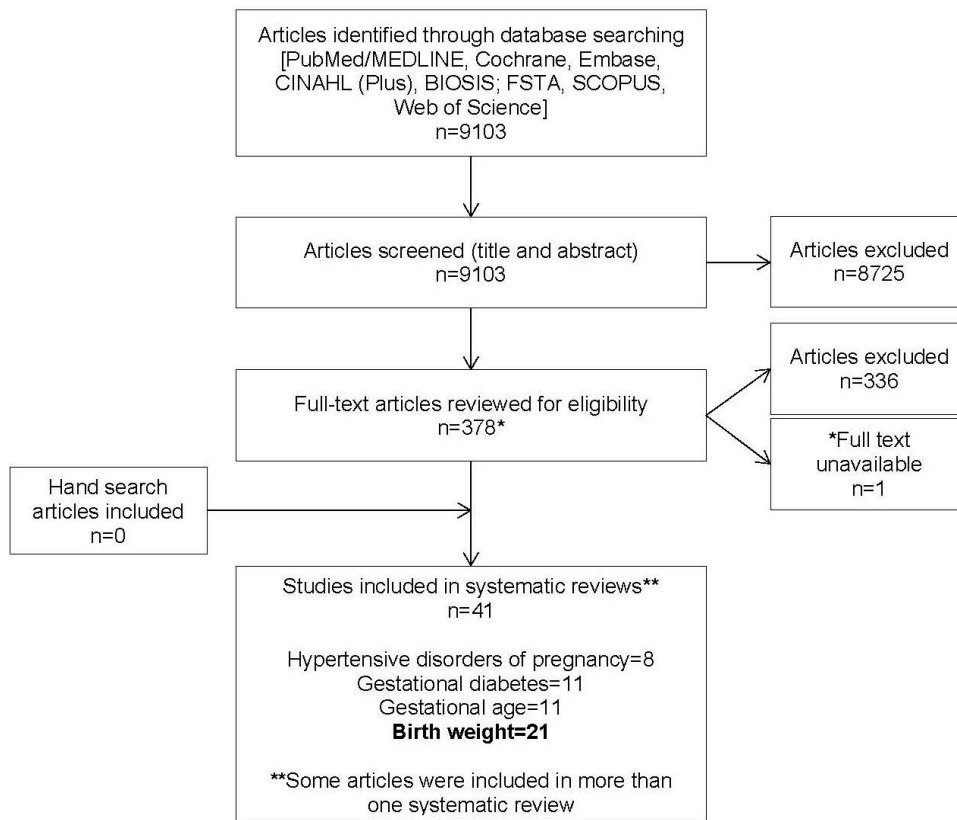
Narrow by SubjectMajor: - women's health

Narrow by SubjectMajor: - pregnancy outcomes

Narrow by SubjectMajor: - pregnancy complications

Narrow by SubjectMajor: - food habits

Narrow by SubjectMajor: - diabetes mellitus, gestational

Figure 2: Flow chart of literature search and screening results

This flow chart illustrates the literature search and screening results for articles examining the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight. The results of the electronic database searches were screened independently by two NESR analysts in a step-wise manner by reviewing titles, abstracts, and full text articles to determine which articles met the criteria for inclusion. A manual search was done to ascertain articles not identified through the electronic database search. The systematic review on the relationship between dietary patterns before and during pregnancy and gestational age- and sex-specific birth weight included 21 articles. The literature search was conducted for multiple systematic reviews that addressed the relationships between dietary patterns before and during pregnancy on gestational age- and sex-specific birth weight, hypertensive disorders of pregnancy, gestational diabetes mellitus, and gestational age at birth; the systematic reviews on hypertensive disorders of pregnancy, gestational diabetes mellitus, and gestational age at birth are reported elsewhere.

List of excluded articles

The table below lists the excluded articles with at least one reason for exclusion, but may not reflect all possible reasons.

Table 8: List of excluded articles

	Excluded Citations	Reasons for Exclusion
1	Aaltonen, J, Ojala, T, Laitinen, K et al. Risk Reduction of Infant Insulin Resistance by Dietary Intervention during Pregnancy and Breastfeeding. Pediatric Academic Societies Annual Meeting; 2009 May 2 5; Baltimore MD, United States, 2009	Dependent variable
2	Abel, Ht, Bannert, N, Starke, I et al. Study into Ca/P homeostasis in premature babies on different diets. Klin Padiatr, 1991, 203	Independent variable
3	Adami, G. F., Friedman, D., Cuneo, S. et al. Intravenous nutritional support in pregnancy. Experience following biliopancreatic diversion. Clinical Nutrition, 1992, 11: 106-109	Independent variable
4	Akbari, Z., Mansourian, M., Kelishadi, R. Relationship of the intake of different food groups by pregnant mothers with the birth weight and gestational age: Need for public and individual educational programs. J Educ Health Promot, 2015, 4. PMID:25883993.	Independent variable
5	Alfonso, H. Preventing preeclampsia: the evidence on nutrients. Nurs Womens Health, 2009, 13: 419-21. PMID:19821918.	Study design
6	Ali, H. I., Jarrar, A. H., El Sadig, M. et al. Diet and carbohydrate food knowledge of multi-ethnic women: a comparative analysis of pregnant women with and without Gestational Diabetes Mellitus. PLoS One, 2013, 8. PMID:24069200.	Study design
7	Alwan, N. A., Greenwood, D. C., Simpson, N. A. et al. Dietary iron intake during early pregnancy and birth outcomes in a cohort of British women. Hum Reprod, 2011, 26: 911-9. PMID:21303776.	Independent variable
8	Andreasyan, K., Ponsonby, A. L., Dwyer, T. et al. Higher maternal dietary protein intake in late pregnancy is associated with a lower infant ponderal index at birth. Eur J Clin Nutr, 2007, 61: 498-508. PMID:17136041.	Independent variable

	Excluded Citations	Reasons for Exclusion
9	Arkkola, T., Uusitalo, U., Kronberg-Kippila, C. et al. Seven distinct dietary patterns identified among pregnant Finnish women--associations with nutrient intake and sociodemographic factors. <i>Public Health Nutr</i> , 2008, 11: 176-82. PMID:17610760.	Dependent variable
10	Asaka, A., Imaizumi, Y., Inouye, E. Analysis of multiple births in Japan. V. Effects of gestational age, maternal age and other factors on growth rate of weight in twins. <i>Jinrui Idengaku Zasshi</i> , 1981, 26: 83-90. PMID:7328851.	Independent variable
11	Asbee, Sm, Jenkins, Tr, Butler, Jr et al. Dietary counseling prevents excessive weight gain during pregnancy, a randomized controlled trial. <i>Obstet Gynecol</i> , 2008, 111	Dependent variable
12	Asp, N. G. Nutrition and human development. <i>Scandinavian Journal of Food and Nutrition</i> , 2006, 50	Independent variable, study design
13	Babson, Sg, Bramhall, JI. Diet and growth in the premature infant. <i>Journal of Pediatrics</i> , 1969, 74: 890-900	Date
14	Bakouei, S., Reisian, F., Lamyian, M. et al. High Intake of Manganese During Second Trimester, Increases the Risk of Preterm Delivery: A Large Scale Cohort Study. <i>Glob J Health Sci</i> , 2015, 7: 226-32. PMID:26156900.	Independent variable
15	Bao, W., Bowers, K., Tobias, D. K. et al. Prepregnancy low-carbohydrate dietary pattern and risk of gestational diabetes mellitus: a prospective cohort study. <i>Am J Clin Nutr</i> , 2014, 99: 1378-84. PMID:24717341.	Independent variable
16	Bao, W., Li, S., Chavarro, J. E. et al. Low Carbohydrate-Diet Scores and Long-term Risk of Type 2 Diabetes Among Women With a History of Gestational Diabetes Mellitus: A Prospective Cohort Study. <i>Diabetes Care</i> , 2016, 39: 43-9. PMID:26577416.	Dependent variable
17	Bao, W., Tobias, D. K., Hu, F. B. et al. Pre-pregnancy potato consumption and risk of gestational diabetes mellitus: prospective cohort study. <i>Bmj</i> , 2016, 352. PMID:26759275.	Independent variable

	Excluded Citations	Reasons for Exclusion
18	Bao, W., Tobias, D. K., Olsen, S. F. et al. Pre-pregnancy fried food consumption and the risk of gestational diabetes mellitus: a prospective cohort study. <i>Diabetologia</i> , 2014, 57: 2485-91. PMID:25303998.	Independent variable
19	Baron, R., Te Velde, S. J., Heymans, M. W. et al. The Relationships of Health Behaviour and Psychological Characteristics with Spontaneous Preterm Birth in Nulliparous Women. <i>Matern Child Health J</i> , 2016, . PMID:27581004.	Independent variable
20	Bell, E. H., Geyer, J., Jones, L. A structured intervention improves breastfeeding success for ill or preterm infants. <i>MCN Am J Matern Child Nurs</i> , 1995, 20: 309-14. PMID:8551932.	Dependent variable
21	Berntorp, K. E. Gestational diabetes: what's up?. <i>Diabetologia</i> , 2016, 59: 1382-1384	Study design
22	Bertolotto, A., Volpe, L., Calianno, A. et al. Physical activity and dietary habits during pregnancy: effects on glucose tolerance. <i>J Matern Fetal Neonatal Med</i> , 2010, 23: 1310-4. PMID:20334531.	Independent variable, study design
23	Bhatia, B. D., Banerjee, D., Agarwal, D. K. et al. Fetal growth: relationship with maternal dietary intakes. <i>Indian J Pediatr</i> , 1983, 50: 113-20. PMID:6618569.	Country
24	Bjerregaard, P., Hansen, J. C. Effects of smoking and marine diet on birthweight in Greenland. <i>Arctic Med Res</i> , 1996, 55: 156-64. PMID:9115541.	Independent variable
25	Bloomfield, F. H., Oliver, M. H., Hawkins, P. et al. A periconceptional nutritional origin for noninfectious preterm birth. <i>Science</i> , 2003, 300. PMID:12714735.	Independent variable, health status
26	Bo, S., Rosato, R., Ciccone, G. et al. Simple lifestyle recommendations and the outcomes of gestational diabetes. A 2 x 2 factorial randomized trial. <i>Diabetes Obes Metab</i> , 2014, 16: 1032-5. PMID:24646172.	Independent variable, health status

	Excluded Citations	Reasons for Exclusion
27	Bobinski, R., Mikulska, M., Mojska, H. et al. Assessment of the diet components of pregnant women as predictors of risk of preterm birth and born baby with low birth weight. <i>Ginekol Pol</i> , 2015, 86: 292-9. PMID:26117989.	Independent variable, study design
28	Bobinski, R., Mikulska, M., Mojska, H. et al. The Dietary Composition of Women Who Delivered Healthy Full-Term Infants, Preterm Infants, and Full-Term Infants Who Were Small for Gestational Age. <i>Biol Res Nurs</i> , 2015, 17: 495-502. PMID:25358685.	Independent variable, study design
29	Borberg, C., Gillmer, M. D., Brunner, E. J. et al. Obesity in pregnancy: the effect of dietary advice. <i>Diabetes Care</i> , 1980, 3: 476-81. PMID:6993162.	Independent variable
30	Borgen, I., Aamodt, G., Harsem, N. et al. Maternal sugar consumption and risk of preeclampsia in nulliparous Norwegian women. <i>Eur J Clin Nutr</i> , 2012, 66: 920-5. PMID:22713766.	Independent variable
31	Bower, D. The influence of dietary salt intake on pre-eclampsia. <i>Journal of obstetrics and gynaecology of the British Commonwealth</i> , 1961, 63: 123-6	Date
32	Bowers, K., Tobias, D. K., Yeung, E. et al. A prospective study of prepregnancy dietary fat intake and risk of gestational diabetes. <i>Am J Clin Nutr</i> , 2012, 95: 446-53. PMID:22218158.	Independent variable
33	BrantsÅlter, A. L., Haugen, M., Myhre, R. et al. Diet matters, particularly in pregnancy – Results from MoBa studies of maternal diet and pregnancy outcomes. <i>Norsk Epidemiologi</i> , 2014, 24: 63-77	Study design
34	Brantsaeter, A. L., Myhre, R., Haugen, M. et al. Intake of probiotic food and risk of preeclampsia in primiparous women: the Norwegian Mother and Child Cohort Study. <i>Am J Epidemiol</i> , 2011, 174: 807-15. PMID:21821542.	Independent variable
35	Breslow, S, Belafsky, Ha, Shangold, Je et al. Control of weight gain in pregnancy: double blind study of a dieting aid. <i>Clinical medicine</i> , 1963, 70: 931-8	Date

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36	Brooke, O. G. Low birth weight babies. Nutrition and feeding. Br J Hosp Med, 1982, 28: 462-9. PMID:7171896.	Dependent variable
37	Brooke, O. G. Nutrition in the preterm infant. Lancet, 1983, 1: 514-6. PMID:6131220.	Study subjects
38	Brown, J. E., Kahn, E. S., Hartman, T. J. Profet, profits, and proof: do nausea and vomiting of early pregnancy protect women from harmful vegetables?. Am J Obstet Gynecol, 1997, 176: 179-81. PMID:9024110.	Independent variable
39	Brumfield, C. G., Huddleston, J. F. The management of diabetic ketoacidosis in pregnancy. Clin Obstet Gynecol, 1984, 27: 50-9. PMID:6423330.	Independent variable
40	Bruno, R., Petrella, E., Bertarini, V. et al. Adherence to a lifestyle programme in overweight/obese pregnant women and effect on gestational diabetes mellitus: a randomized controlled trial. Matern Child Nutr, 2016, . PMID:27647837.	Independent variable, study design
41	Buchanan, T. A., Kjos, S. L. Diabetes and pregnancy. Curr Ther Endocrinol Metab, 1994, 5: 278-83. PMID:7704732.	Study design
42	Buul, E, Rijpkema, A, Steegers, E et al. Chronic dietary sodium restriction in pregnancy reduces calcium intake. J Perinat Med, 1992, 20	Independent variable
43	Campbell, Dm. Dietary restriction in obesity and its effect on neonatal outcome. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Rcoq; 1983; London, UK, 1983, : 243-50	Not peer-reviewed
44	Canda, M. T., Sezer, O., Demir, N. An audit of seafood consumption awareness during pregnancy and its association with maternal and fetal outcomes in a Turkish population. J Obstet Gynaecol, 2011, 31: 293-7. PMID:21534748.	Independent variable
45	Carmichael, S. L., Yang, W., Shaw, G. M. Maternal dietary nutrient intake and risk of preterm delivery. Am J Perinatol, 2013, 30: 579-88. PMID:23208764.	Independent variable, study design

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46	Carter, J. P., Furman, T., Hutcheson, H. R. Preeclampsia and reproductive performance in a community of vegans. South Med J, 1987, 80: 692-7. PMID:3589760.	Independent variable
47	Carver, Jd, Saste, Md, Sosa, R et al. Dietary nucleotide (NT) effects on superior mesenteric artery (SMA) blood flow in preterm infants. Pediatr Res, 2000, 47	Independent variable
48	C'De Baca, J., Lapham, S. C., Skipper, B. J. et al. Use of computer interview data to test associations between risk factors and pregnancy outcomes. Comput Biomed Res, 1997, 30: 232-43. PMID:9281330.	Independent variable
49	Chamberlain, G. Epidemiology and aetiology of the preterm baby. Clin Obstet Gynaecol, 1984, 11: 297-314. PMID:6478726.	Study design
50	Chandler-Laney, P. C., Schneider, C. R., Gower, B. A. et al. Association of late-night carbohydrate intake with glucose tolerance among pregnant African American women. Matern Child Nutr, 2016, 12: 688-98. PMID:25786515.	Independent variable
51	Chavarro, J. E., Halldorsson, T. I., Leth, T. et al. A prospective study of trans fat intake and risk of preeclampsia in Denmark. Eur J Clin Nutr, 2011, 65: 944-51. PMID:21559043.	Independent variable
52	Chen, C. M., Weng, H. C., Li, Y. C. et al. The evaluation of dietary intervention on the blood glucose level of gestational diabetes mellitus pregnant women. Nutritional Sciences Journal, 1999, 24: 250-261	Language
53	Chen, L., Hu, F. B., Yeung, E. et al. Prospective study of pre-gravid sugar-sweetened beverage consumption and the risk of gestational diabetes mellitus. Diabetes Care, 2009, 32: 2236-41. PMID:19940226.	Independent variable
54	Chong, M. F., Chia, A. R., Colega, M. et al. Maternal Protein Intake during Pregnancy Is Not Associated with Offspring Birth Weight in a Multiethnic Asian Population. J Nutr, 2015, 145: 1303-10. PMID:25948786.	Independent variable

	Excluded Citations	Reasons for Exclusion
55	Christian, K, Andreas, M, Martin, F. Diet and lifestyle modification in mothers with burnout syndrome: Ayurvedic versus conventional standard counselling-design of a randomised clinical pilot study (VEDA-Trial) [abstract]. European journal of integrative medicine [abstracts of the 5th european congress for integrative medicine; 2012 sept 21-22; flo, 2012, 4: 47-8	Dependent variable
56	Clapp, J. F. Effects of Diet and Exercise on Insulin Resistance during Pregnancy. Metab Syndr Relat Disord, 2006, 4: 84-90. PMID:18370754.	Study design
57	Clausen, T., Slott, M., Solvoll, K. et al. High intake of energy, sucrose, and polyunsaturated fatty acids is associated with increased risk of preeclampsia. Am J Obstet Gynecol, 2001, 185: 451-8. PMID:11518908.	Independent variable
58	Coelho Nde, L., Cunha, D. B., Esteves, A. P. et al. Dietary patterns in pregnancy and birth weight. Rev Saude Publica, 2015, 49. PMID:26398873.	Study design
59	Cooney, G. Food for thought. Midwives, 2008, 11: 30-1. PMID:24902215.	Study design
60	Cooper, M. L. Stories to learn from: toxemia in pregnancy. Midwifery Today Int Midwife, 2014, : 18-21. PMID:25980103.	Not peer-reviewed
61	Corbett, M. A., Burst, H. V. Nutritional intervention in pregnancy. J Nurse Midwifery, 1983, 28: 23-9. PMID:6554311.	Study design, independent variable
62	Cosgrove, M., Davies, D. P. Poor diet in pregnancy may be a proxy for some other hostile influence on fetal growth [8]. Br Med J, 1996, 312: 1478-1479	Independent variable, study design
63	Costa-Orvay, Ja, Figueras-Aloy, J, Romera, G et al. The effects of varying protein and energy intakes on the growth and body composition of very low birth weight infants. Nutr J, 2011, 10	Independent variable
64	Crozier, S. R., Inskip, H. M., Godfrey, K. M. et al. Nausea and vomiting in early pregnancy: Effects on food intake and diet quality. Matern Child Nutr, 2016, . PMID:27896913.	Dependent variable

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65	Dancause, K. N., Mutran, D., Elgbeili, G. et al. Dietary change mediates relationships between stress during pregnancy and infant head circumference measures: the QF2011 study. <i>Matern Child Nutr</i> , 2016, . PMID:27562643.	Independent variable
66	Darling, A. M., Mitchell, A. A., Werler, M. M. Preconceptional Iron Intake and Gestational Diabetes Mellitus. <i>Int J Environ Res Public Health</i> , 2016, 13. PMID:27231921.	Independent variable
67	Davidson, J. K. Newer approaches to diet management of diabetes: calorie control. <i>Med Times</i> , 1980, 108: 35-40. PMID:7374404.	Study design
68	Davies, W. E., Hopkins, P. C., Rose, S. J. et al. The influence of different taurine diets on hearing development in normal babies. A preliminary report. <i>Adv Exp Med Biol</i> , 1996, 403: 631-7. PMID:8915404.	Independent variable
69	Davison, J. M., Lindheimer, M. D. Pregnancy in renal transplant recipients. <i>J Reprod Med</i> , 1982, 27: 613-21. PMID:6757420.	Health status
70	Dawn, Cs. Effects of substandard prenatal diet and nutrition on the development and incidence of pre-eclampsia of pregnancy. <i>J Obstet Gynaecol India</i> , 1961, 12: 237-45	Date
71	de Seymour, J., Chia, A., Colega, M. et al. Maternal Dietary Patterns and Gestational Diabetes Mellitus in a Multi-Ethnic Asian Cohort: The GUSTO Study. <i>Nutrients</i> , 2016, 8. PMID:27657116.	Study design
72	Deka, D., Sharma, N. Nutrition in pregnancy and lactation. <i>Perinatology</i> , 2005, 7: 1-15	Study design
73	Delemarre, F. M., van Leest, L. A., Jongsma, H. W. et al. Effect of low-sodium diet on uteroplacental circulation. <i>J Matern Fetal Med</i> , 2000, 9: 197-200. PMID:11048827.	Independent variable
74	Demmelair, H, Klingler, M, Campoy, C et al. The influence of habitual diet and increased docosahexaenoic acid intake during pregnancy on the fatty acid composition of individual placental lipids [Study design]. <i>J Pediatr Gastroenterol Nutr</i> , 2005, 40: 622-3	Study design

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75	Deveer, R., Deveer, M., Akbaba, E. et al. The effect of diet on pregnancy outcomes among pregnant with abnormal glucose challenge test. <i>Eur Rev Med Pharmacol Sci</i> , 2013, 17: 1258-61. PMID:23690197.	Independent variable
76	Dieckmann, Wj, Davis, Me, Rynkiewicz, Lm et al. Does the administration of diethylstilbestrol during pregnancy have therapeutic value?. <i>Am J Obstet Gynecol</i> , 1953, 66: 1062-75	Date
77	Diet & nutrition. Good news: caffeine in pregnancy doesn't affect the baby's growth..and folic acid seems to prevent cleft lip. <i>Child Health Alert</i> , 2007, 25: 5-6. PMID:17443983.	Not peer-reviewed
78	Dodd, J. M., Deussen, A. R., Mohamad, I. et al. The effect of antenatal lifestyle advice for women who are overweight or obese on secondary measures of neonatal body composition: The LIMIT randomised trial. <i>BJOG: An International Journal of Obstetrics and Gynaecology</i> , 2016, 123: 244-253	Independent variable
79	Dodd, J. M., McPhee, A. J., Turnbull, D. et al. The effects of antenatal dietary and lifestyle advice for women who are overweight or obese on neonatal health outcomes: the LIMIT randomised trial. <i>BMC Med</i> , 2014, 12. PMID:25315325.	Independent variable
80	Dominguez, L. J., Martinez-Gonzalez, M. A., Basterra-Gortari, F. J. et al. Fast food consumption and gestational diabetes incidence in the SUN project. <i>PLoS One</i> , 2014, 9. PMID:25215961.	Independent variable
81	Donnelly, J, Horan, M, Walsh, J et al. Impact of a Low GI Diet on Neonatal Body Composition [ROLO Kids]. <i>Pediatric Academic Societies Annual Meeting</i> , 2013,	Not peer-reviewed
82	Donnelly, J. M., Walsh, J. M., Byrne, J. et al. Impact of maternal diet on neonatal anthropometry: a randomized controlled trial. <i>Pediatr Obes</i> , 2015, 10: 52-6. PMID:24443392.	Independent variable
83	Doyle, W. Maternal nutrition and low birth weight. <i>J Fam Health Care</i> , 2002, 12. PMID:12630147.	Study design

	Excluded Citations	Reasons for Exclusion
84	Doyle, W., Crawford, M. A., Wynn, A. H. A. et al. Maternal nutrient intake and birth-weight. <i>Journal of Human Nutrition and Dietetics</i> , 1989, 2: 415-422	Independent variable
85	Drake, A. J., McPherson, R. C., Godfrey, K. M. et al. An unbalanced maternal diet in pregnancy associates with offspring epigenetic changes in genes controlling glucocorticoid action and foetal growth. <i>Clin Endocrinol (Oxf)</i> , 2012, 77: 808-15. PMID:22642564.	Dependent variable
86	Drouillet, P., Kaminski, M., De Lauzon-Guillain, B. et al. Association between maternal seafood consumption before pregnancy and fetal growth: evidence for an association in overweight women. The EDEN mother-child cohort. <i>Paediatr Perinat Epidemiol</i> , 2009, 23: 76-86. PMID:19228317.	Independent variable
87	Dubois, S., Coulombe, C., Pencharz, P. et al. Ability of the Higgins Nutrition Intervention Program to improve adolescent pregnancy outcome. <i>J Am Diet Assoc</i> , 1997, 97: 871-8. PMID:9259709.	Independent variable
88	Dunn, C., Kolasa, K., Dunn, P. C. et al. Dietary intake of pregnant adolescents in a rural southern community. <i>J Am Diet Assoc</i> , 1994, 94: 1040-1. PMID:8071488.	Independent variable, dependent variable
89	Ebbs, Jh, Tisdall, Ff, Scott, Wa. The influence of prenatal diet on the mother and child. <i>Journal of Nutrition</i> , 1941, 22: 515-26	Date
90	Elmacioglu, F., Surucu, B., Alper, T. et al. Is adequate and balanced nutrition during pregnancy more effective than iron and folic acid supplements?. <i>Central European Journal of Medicine</i> , 2010, 5: 235-242	Dependent variable
91	Ershoff, Dh, Aaronson, Nk, Danaher, Bg et al. Behavioral, health, and cost outcomes of an HMO based prenatal health education program. <i>Public health reports</i> , 1983, 98: 536-47	Independent variable
92	Ershoff, D. H., Aaronson, N. K., Danaher, B. G. et al.. Behavioral, health, and cost outcomes of an HMO-based prenatal health education program. <i>Public Health Rep</i> , 1983, 98: 536-47. PMID:6419268.	Duplicate

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93	Eshriqui, I., Vilela, A. A., Rebelo, F. et al. Gestational dietary patterns are not associated with blood pressure changes during pregnancy and early postpartum in a Brazilian prospective cohort. <i>Eur J Nutr</i> , 2016, 55: 21-32. PMID:25526968.	Dependent variable
94	Fairburn, C. G., Stein, A., Jones, R. Eating habits and eating disorders during pregnancy. <i>Psychosom Med</i> , 1992, 54: 665-72. PMID:1454960.	Independent variable
95	Farbu, J., Haugen, M., Meltzer, H. M. et al. Impact of singlehood during pregnancy on dietary intake and birth outcomes- a study in the Norwegian Mother and Child Cohort Study. <i>BMC Pregnancy Childbirth</i> , 2014, 14. PMID:25475509.	Independent variable
96	Fard, N Mehrabian F Sarraf-Zadegan NS. Fat-modified diets during pregnancy and lactation and serum lipids after birth. <i>Indian J Pediatr</i> , 2004, 71: 683-7	Country
97	Farland, L. V., Rifas-Shiman, S. L., Gillman, M. W. Early Pregnancy Cravings, Dietary Intake, and Development of Abnormal Glucose Tolerance. <i>J Acad Nutr Diet</i> , 2015, 115. PMID:26099686.	Study design, independent variable
98	Ferland, S., O'Brien, H. T. Maternal dietary intake and pregnancy outcome. <i>J Reprod Med</i> , 2003, 48: 86-94. PMID:12621791.	Independent variable
99	Flynn, A. C., Seed, P. T., Patel, N. et al. Dietary patterns in obese pregnant women; influence of a behavioral intervention of diet and physical activity in the UPBEAT randomized controlled trial. <i>Int J Behav Nutr Phys Act</i> , 2016, 13. PMID:27894316.	Health status
100	Ford, J. H. Preconception risk factors and SGA babies: Papilloma virus, omega 3 and fat soluble vitamin deficiencies. <i>Early Hum Dev</i> , 2011, 87: 785-9. PMID:21705161.	Independent variable
101	Fowles, E. R., Gabrielson, M. First trimester predictors of diet and birth outcomes in low-income pregnant women. <i>J Community Health Nurs</i> , 2005, 22: 117-30. PMID:15877540.	Independent variable, study design
102	Fraser, R. B., Ford, F. A., Milner, R. D. G. A controlled trial of a high dietary fibre intake in pregnancy-effects in plasma glucose and insulin levels. <i>Diabetologia</i> , 1983, 25: 238-241	Independent variable

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103	Fraser, Rb. High fibre diets in pregnancy. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Royal College of Obstetricians and Gynaecologists; 1982 September, 1983, : 269-80	Independent variable, not peer reviewed
104	Garratt, F. N. Pre-eclampsia: a challenge to public health teams worldwide to ensure that maternal diets contain adequate levels of folic acid, n3 polyunsaturated fatty acids and vitamin D at conception. Public Health, 2009, 123: 95-6. PMID:19058819.	Study design
105	Gennaro, S., Biesecker, B., Fantasia, H. C. et al. Nutrition profiles of African [corrected] American women in the third trimester. MCN Am J Matern Child Nurs, 2011, 36: 120-6. PMID:21350375.	Independent variable, dependent variable
106	Gerrard, J., Popeski, D., Ebbeling, L. et al. Dietary omega 3 fatty acids and gestational hypertension in the Inuit. Arctic Med Res, 1991, : 763-7. PMID:1365294.	Independent variable, study design
107	Gesteiro, E., Rodriguez Bernal, B., Bastida, S. et al. Maternal diets with low healthy eating index or Mediterranean diet adherence scores are associated with high cord-blood insulin levels and insulin resistance markers at birth. Eur J Clin Nutr, 2012, 66: 1008-15. PMID:22828732.	Dependent variable
108	Ghebremeskel, K., Leighfield, M., Ashwell, M. et al. Infant brain lipids and diet [1]. Lancet, 1992, 340: 1093-1094	Dependent variable
109	Gillen, L., Tapsell, L. C., Martin, G. S. et al. The type and frequency of consumption of carbohydrate-rich foods may play a role in the clinical expression of insulin resistance during pregnancy. Dietetics, 2002, 59: 135-143	Dependent variable
110	Glueck, C. J., Goldenberg, N., Pranikoff, J. et al. Effects of metformin-diet intervention before and throughout pregnancy on obstetric and neonatal outcomes in patients with polycystic ovary syndrome. Curr Med Res Opin, 2013, 29: 55-62. PMID:23205605.	Health status
111	Godfrey, K., Robinson, S., Barker, D. J. et al. Maternal nutrition in early and late pregnancy in relation to placental and fetal growth. Bmj, 1996, 312: 410-4. PMID:8601112.	Independent variable

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112	Grant, S. M., Wolever, T. M., O'Connor, D. L. et al. Effect of a low glycaemic index diet on blood glucose in women with gestational hyperglycaemia. <i>Diabetes Res Clin Pract</i> , 2011, 91: 15-22. PMID:21094553.	Independent variable
113	Gray-Donald, K., Robinson, E., Collier, A. et al. Intervening to reduce weight gain in pregnancy and gestational diabetes mellitus in Cree communities: an evaluation. <i>Cmaj</i> , 2000, 163: 1247-51. PMID:11107459.	Independent variable
114	Grivell, R. M., Yelland, L. N., Deussen, A. et al. Antenatal dietary and lifestyle advice for women who are overweight or obese and the effect on fetal growth and adiposity: the LIMIT randomised trial. <i>Bjog</i> , 2016, 123: 233-43. PMID:26841216.	Independent variable
115	Guilloty, N. I., Soto, R., Anzalota, L. et al. Diet, Pre-pregnancy BMI, and Gestational Weight Gain in Puerto Rican Women. <i>Matern Child Health J</i> , 2015, 19: 2453-61. PMID:26100133.	Independent variable, dependent variable
116	Guldner, L., Monfort, C., Rouget, F. et al. Maternal fish and shellfish intake and pregnancy outcomes: a prospective cohort study in Brittany, France. <i>Environ Health</i> , 2007, 6. PMID:17958907.	Independent variable
117	Gupta, A. P., Bhandari, B., Gupta, A. et al. Stool pH and sugar in preterm neonates. <i>Indian J Pediatr</i> , 1984, 51: 391-3. PMID:6526446.	Independent variable
118	Haas, A. V. Diet du jour! Pregnancy and popular diets. <i>Midwifery Today Int Midwife</i> , 2014, : 53-5. PMID:25975083.	Study design, non peer-reviewed
119	Haggarty, P., Campbell, D. M., Duthie, S. et al. Diet and deprivation in pregnancy. <i>Br J Nutr</i> , 2009, 102: 1487-97. PMID:19682400.	Independent variable
120	Halldorsson, T. I., Thorsdottir, I., Meltzer, H. M. et al. Dioxin-like activity in plasma among Danish pregnant women: dietary predictors, birth weight and infant development. <i>Environ Res</i> , 2009, 109: 22-8. PMID:18945425.	Independent variable

	Excluded Citations	Reasons for Exclusion
121	Halldorsson, T. I., Thorsdottir, I., Meltzer, H. M. et al. Linking exposure to polychlorinated biphenyls with fatty fish consumption and reduced fetal growth among Danish pregnant women: a cause for concern?. <i>Am J Epidemiol</i> , 2008, 168: 958-65. PMID:18718897.	Independent variable
122	Hankin, Me, Symonds, Em. Body weight, diet and pre-eclamptic toxemia of pregnancy. <i>gynaecology</i> , 1962, 4: 156-60	Date
123	Harper, V., MacInnes, R., Campbell, D. et al. Increased birth weight in northerly islands: is fish consumption a red herring?. <i>Bmj</i> , 1991, 303. PMID:1878642.	Independent variable
124	Hatfield, Hm, Dunstan, Ja, Hayes, L et al. Dietary N-3 polyunsaturated fatty acid (PUFA) supplementation during pregnancy is associated with changes in cord blood (CB) progenitor numbers and responsiveness to IL-5 in infants at risk of atopy [Abstract]. <i>Journal of allergy and clinical immunology</i> , 2003, 111	Study design
125	Haugen, M., Brantsaeter, A. L., Trogstad, L. et al. Vitamin D supplementation and reduced risk of preeclampsia in nulliparous women. <i>Epidemiology</i> , 2009, 20: 720-6. PMID:19451820.	Independent variable
126	Hayashi, Tt, Phitaksphraiwan, P, Willson, Jr. Effects of diet and diuretic agents in pregnancy toxemias. <i>Obstet Gynecol</i> , 1963, 22: 327-34	Date
127	Healthy diet halves the risk of diabetes after pregnancy. <i>Kidney Care</i> , 2013, 10: 6-6	Dependent variable
128	Hegsted, D. M. What is a healthful diet?. <i>Prim Care</i> , 1982, 9: 445-73. PMID:6924383.	Dependent variable
129	Heim, T. Energy and lipid requirements of the fetus and the preterm infant. <i>J Pediatr Gastroenterol Nutr</i> , 1983, . PMID:6417303.	Independent variable, study design
130	Hellmuth, C., Lindsay, K. L., Uhl, O. et al. Association of maternal prepregnancy BMI with metabolomic profile across gestation. <i>Int J Obes (Lond)</i> , 2017, 41: 159-169. PMID:27569686.	Dependent variable

	Excluded Citations	Reasons for Exclusion
131	Hennessy, M. D., Volpe, S. L., Sammel, M. D. et al. Skipping meals and less walking among African Americans diagnosed with preterm labor. J Nurs Scholarsh, 2010, 42: 147-55. PMID:20618599.	Independent variable
132	Heppe, D. H., Steegers, E. A., Timmermans, S. et al. Maternal fish consumption, fetal growth and the risks of neonatal complications: the Generation R Study. Br J Nutr, 2011, 105: 938-49. PMID:21266095.	Independent variable
133	Hernandez-Diaz, S., Boeke, C. E., Romans, A. T. et al. Triggers of spontaneous preterm delivery--why today?. Paediatr Perinat Epidemiol, 2014, 28: 79-87. PMID:24384058.	Independent variable, study design
134	Herrera, Mg, Mora, Jo, Paredes, B et al. Maternal weight/height and the effect of food supplementation during pregnancy and lactation. Maternal Nutrition during Pregnancy and Lactation. A Nestle Foundation Workshop; 1979 April 26-27; Lausanne Switzerland, 1980, : 252-63	Independent variable, not peer reviewed
135	Hoff, C., Wertenlecker, W., Reyes, E. et al. Diet, blood pressure, and hematologic variables of nulliparous women attending a prenatal clinic. Obstet Gynecol, 1986, 67: 868-72. PMID:3703412.	Independent variable
136	Hoffman, D, Uauy, R, Birch, D et al. Essentiality of dietary docosahexaenoic acid (dha) for optimal visual maturation in preterm infants: plasma and red blood cell (rbc) fatty acid profiles. Iovs, 1992, 33	Dependent variable
137	Hoffman, Dr, Uauy, R. Essentiality of dietary n-3 fatty acids for premature infants; plasma and red blood cell fatty acid composition. Lipids, 1992, 27: 886-95	Independent variable
138	Hollingsworth, D. R., Ney, D., Stubblefield, N. et al. Metabolic and therapeutic assessment of gestational diabetes by two-hour and twenty-four-hour isocaloric meal tolerance tests. Diabetes, 1985, : 81-7. PMID:3888746.	Dependent variable
139	Hook, E. B. Influence of pregnancy on dietary selection. Int J Obes, 1980, 4: 338-40. PMID:7419353.	Study design

	Excluded Citations	Reasons for Exclusion
140	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal low glycaemic index diet, fat intake and postprandial glucose influences neonatal adiposity--secondary analysis from the ROLO study. <i>Nutr J</i> , 2014, 13. PMID:25084967.	Independent variable
141	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal Nutrition and Glycaemic Index during Pregnancy Impacts on Offspring Adiposity at 6 Months of Age--Analysis from the ROLO Randomised Controlled Trial. <i>Nutrients</i> , 2016, 8. PMID:26742066.	Independent variable, dependent variable
142	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal nutrition and glycaemic index during pregnancy impacts on offspring adiposity at 6 months of age--analysis from the ROLO randomised controlled trial. <i>Nutrients</i> , 2016, 8.	Duplicate
143	Huh, S. Y., Rifas-Shiman, S. L., Kleinman, K. P. et al. Maternal protein intake is not associated with infant blood pressure. <i>Int J Epidemiol</i> , 2005, 34: 378-84. PMID:15576466.	Independent variable
144	Hui, A. L., Ludwig, S. M., Gardiner, P. et al. Community-based exercise and dietary intervention during pregnancy: A pilot study. <i>Canadian Journal of Diabetes</i> , 2006, 30: 169-175	Independent variable
145	Hui, A., Back, L., Ludwig, S. et al. Lifestyle intervention on diet and exercise reduced excessive gestational weight gain in pregnant women under a randomized controlled trial. <i>Obstetrical and Gynecological Survey</i> , 2012, 67: 263-264	Independent variable
146	Iyengar, L. Effects of dietary supplements late in pregnancy on the expectant mother and her newborn. <i>Indian Journal of Medical Research</i> , 1967, 55: 85-9	Date
147	Jedrychowski, W., Perera, F., Mrozek-Budzyn, D. et al. Higher fish consumption in pregnancy may confer protection against the harmful effect of prenatal exposure to fine particulate matter. <i>Ann Nutr Metab</i> , 2010, 56: 119-26. PMID:20134157.	Independent variable

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148	Jing, W., Huang, Y., Liu, X. et al. The effect of a personalized intervention on weight gain and physical activity among pregnant women in China. <i>Int J Gynaecol Obstet</i> , 2015, 129: 138-41. PMID:25697965.	Independent variable
149	Johnson, A. A., Knight, E. M., Edwards, C. H. et al. Dietary intakes, anthropometric measurements and pregnancy outcomes. <i>J Nutr</i> , 1994, 124. PMID:8201444.	Independent variable
150	Jovanovic-Peterson, L, Durak, Ep, Peterson, Cm. Randomized trial of diet vs diet plus cardiovascular conditioning on glucose levels in gestational diabetes. <i>Am J Obstet Gynecol</i> , 1989, 161: 415-9	Health status
151	Jovanovic-Peterson, L., Peterson, C. M. Turning point in the management of pregnancies complicated by diabetes. Normoglycemia with self blood glucose monitoring of diet and insulin dosing. <i>ASAIO Trans</i> , 1990, 36: 799-804. PMID:2268482.	Independent variable, study design
152	Jowett, N. I., Nichol, S. G. Diabetic pregnancy. <i>Midwives Chron</i> , 1987, 100: 33-6. PMID:3645266.	Study design
153	Kafatos, A. G., Vlachonikolis, I. G., Codrington, C. A. Nutrition during pregnancy: the effects of an educational intervention program in Greece. <i>Am J Clin Nutr</i> , 1989, 50: 970-9. PMID:2816804.	Independent variable
154	Kalhan, S. C., Tserng, K. Y., Gilfillan, C. et al. Metabolism of urea and glucose in normal and diabetic pregnancy. <i>Metabolism</i> , 1982, 31: 824-33. PMID:7098852.	Dependent variable
155	Kaseb, F., Kimiagar, M., Ghafarpour, M. et al. Effect of traditional food supplementation during pregnancy on maternal weight gain and birthweight. <i>Int J Vitam Nutr Res</i> , 2002, 72: 389-93. PMID:12596505.	Independent variable
156	Kelleher, C. C., Viljoen, K., Khalil, H. et al. Longitudinal follow-up of the relationship between dietary intake and growth and development in the Lifeways cross-generation cohort study 2001-2013. <i>Proc Nutr Soc</i> , 2014, 73: 118-31. PMID:24300176.	Study design

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157	Kesmodel, U., Olsen, S. F., Salvig, J. D. Marine n-3 fatty acid and calcium intake in relation to pregnancy induced hypertension, intrauterine growth retardation, and preterm delivery. A case-control study. Acta Obstet Gynecol Scand, 1997, 76: 38-44. PMID:9033242.	Independent variable
158	Khoury, J, Haugen, G, Tonstad, S et al. Effect of an antiatherogenic diet on maternal and fetal Doppler velocimetry: a randomized clinical trial. 35th Nordic Congress of Obstetrics and Gynecology; 2006 May 23-25; Goteburg, Sweden, 2008,	Not peer-reviewed
159	Khoury, J, Henriksen, T, Seljeflot, I et al. Effects of a cholesterol-lowering diet during pregnancy on cardiovascular risk factors and pregnancy outcome: a randomized clinical trial [Study design]. Atherosclerosis. Supplements, 2006, 7	Study design
160	Khoury, J., Haugen, G., Tonstad, S. et al. Effect of a cholesterol-lowering diet during pregnancy on maternal and fetal Doppler velocimetry: the CARRDIP study. Am J Obstet Gynecol, 2007, 196. PMID:17547890.	Independent variable
161	Kinnunen, T. I., Pasanen, M., Aittasalo, M. et al. Preventing excessive weight gain during pregnancy - a controlled trial in primary health care. Eur J Clin Nutr, 2007, 61: 884-91. PMID:17228348.	Independent variable
162	Kinnunen, T. I., Puhkala, J., Raitanen, J. et al. Effects of dietary counselling on food habits and dietary intake of Finnish pregnant women at increased risk for gestational diabetes - a secondary analysis of a cluster-randomized controlled trial. Matern Child Nutr, 2014, 10: 184-97. PMID:22735030.	Independent variable, dependent variable
163	Kizirian, N. V., Kong, Y., Muirhead, R. et al. Effects of a low-glycemic index diet during pregnancy on offspring growth, body composition, and vascular health: a pilot randomized controlled trial. Am J Clin Nutr, 2016, 103: 1073-82. PMID:26936333.	Independent variable

	Excluded Citations	Reasons for Exclusion
164	Klebanoff, M. A., Harper, M., Lai, Y. et al. Fish consumption, erythrocyte fatty acids, and preterm birth. <i>Obstet Gynecol</i> , 2011, 117: 1071-7. PMID:21508745.	Independent variable
165	Knudsen, V. K., Heitmann, B. L., Halldorsson, T. I. et al. Maternal dietary glycaemic load during pregnancy and gestational weight gain, birth weight and postpartum weight retention: a study within the Danish National Birth Cohort. <i>Br J Nutr</i> , 2013, 109: 1471-8. PMID:22906835.	Independent variable
166	Knuist, M., Bonsel, G. J., Zondervan, H. A. et al. Low sodium diet and pregnancy-induced hypertension: a multi-centre randomised controlled trial. <i>Br J Obstet Gynaecol</i> , 1998, 105: 430-4. PMID:9609271.	Independent variable
167	Koivusalo, S. B., Rono, K., Klemetti, M. M. et al. Gestational Diabetes Mellitus Can Be Prevented by Lifestyle Intervention: The Finnish Gestational Diabetes Prevention Study (RADIEL): A Randomized Controlled Trial. <i>Diabetes Care</i> , 2016, 39: 24-30. PMID:26223239.	Independent variable
168	Kokanali, M. K., Tokmak, A., Kaymak, O. et al. The effect of treatment on pregnancy outcomes in women with one elevated oral glucose tolerance test value. <i>Ginekol Pol</i> , 2014, 85: 748-53. PMID:25546925.	Independent variable
169	Kolu, P., Raitanen, J., Rissanen, P. et al. Cost-effectiveness of lifestyle counselling as primary prevention of gestational diabetes mellitus: findings from a cluster-randomised trial. <i>PLoS One</i> , 2013, 8. PMID:23457562.	Independent variable
170	Korpi-Hyovalti, E., Schwab, U., Laaksonen, D. E. et al. Effect of intensive counselling on the quality of dietary fats in pregnant women at high risk of gestational diabetes mellitus. <i>Br J Nutr</i> , 2012, 108: 910-7. PMID:22093485.	Independent variable

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171	Kubota, K., Itoh, H., Tasaka, M. et al. Changes of maternal dietary intake, bodyweight and fetal growth throughout pregnancy in pregnant Japanese women. J Obstet Gynaecol Res, 2013, 39: 1383-90. PMID:23815608.	Independent variable
172	Kumar, P., Nangia, S., Saili, A. et al. Growth and morbidity patterns of exclusively breast-fed preterm babies. Indian Pediatr, 1999, 36: 296-300. PMID:10713842.	Dependent variable
173	Lakin, V., Haggarty, P., Abramovich, D. R. et al. Dietary intake and tissue concentration of fatty acids in omnivore, vegetarian and diabetic pregnancy. Prostaglandins Leukot Essent Fatty Acids, 1998, 59: 209-20. PMID:9844995.	Independent variable
174	Langley-Evans, A. J., Langley-Evans, S. C. Relationship between maternal nutrient intakes in early and late pregnancy and infants weight and proportions at birth: prospective cohort study. J R Soc Promot Health, 2003, 123: 210-6. PMID:14669495.	Independent variable
175	Laraia, B. A., Siega-Riz, A. M., Kaufman, J. S. et al. Proximity of supermarkets is positively associated with diet quality index for pregnancy. Prev Med, 2004, 39: 869-75. PMID:15475018.	Dependent variable
176	Latva-Pukkila, U., Isolauri, E., Laitinen, K. Dietary and clinical impacts of nausea and vomiting during pregnancy. J Hum Nutr Diet, 2010, 23: 69-77. PMID:19943842.	Dependent variable
177	Leblance, H., Passa, P. Diabetes and pregnancy. Revue du Praticien - Medecine Generale, 1992, 6: 577-582	Study design, language
178	Lechtig, A, Habicht, Jp, Delgado, H et al. Effect of food supplementation during pregnancy on birthweight. Pediatrics, 1975, 56: 508-20	Date
179	Lenders, C. M., Hediger, M. L., Scholl, T. O. et al. Gestational age and infant size at birth are associated with dietary sugar intake among pregnant adolescents. J Nutr, 1997, 127: 1113-7. PMID:9187625.	Independent variable

	Excluded Citations	Reasons for Exclusion
180	Ley, S. H., Hanley, A. J., Retnakaran, R. et al. Effect of macronutrient intake during the second trimester on glucose metabolism later in pregnancy. <i>Am J Clin Nutr</i> , 2011, 94: 1232-40. PMID:21955650.	Independent variable, study design
181	L'Heureux, J. Got sugar? Tips on preventing diabetes. <i>Posit Living</i> , 2002, 11: 12-4. PMID:12083048.	Study design
182	Li, S., Zhu, Y., Chavarro, J. E. et al. Healthful Dietary Patterns and the Risk of Hypertension Among Women With a History of Gestational Diabetes Mellitus: A Prospective Cohort Study. <i>Hypertension</i> , 2016, 67: 1157-65. PMID:27091899.	Dependent variable
183	Lilja, G, Dannaeus, A, Foucard, T et al. Effects of maternal diet during late pregnancy and lactation on the development of atopic disease in infants up to 18 months of age - in-vivo results. <i>Clinical and Experimental Allergy</i> , 1989, 19: 473-9	Dependent variable
184	Liu, X., Lv, L., Zhang, H. et al. Folic acid supplementation, dietary folate intake and risk of preterm birth in China. <i>European Journal of Nutrition</i> , 2016, 55: 1411-1422	Independent variable, study design
185	Lorber, D. Gestational diabetes: The hidden epidemic. <i>Female Patient - Practical Ob/Gyn Medicine</i> , 1990, 15: 15-25	Study design
186	Luoto, R, Nermes, M, Laitinen, K et al. Impact of Maternal Probiotic-Supplemented Dietary Counselling on Pregnancy Outcome and Prenatal and Postnatal Growth: A Double-Blind, Placebo-Controlled Study. <i>Pediatric Academic Societies Annual Meeting</i> ; 2009 May 2 5; Baltimore MD, United States, 2009,	Not peer-reviewed
187	MacGillivray, I. Aetiology of pre-eclampsia. <i>Br J Hosp Med</i> , 1981, 26. PMID:7296126.	Independent variable, study design
188	MacNeill, S., Dodds, L., Hamilton, D. C. et al. Rates and risk factors for recurrence of gestational diabetes. <i>Diabetes Care</i> , 2001, 24: 659-62. PMID:11315827.	Independent variable

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189	Mahony, R, Byrne, J, Curran, S et al. A pilot study of the feasibility of a randomised trial of low glycaemic diet versus normal diet from early pregnancy in euglycaemic women. Arch Dis Child Fetal Neonatal Ed, 2008, 93	Not peer-reviewed
190	Makela, J., Lagstrom, H., Kaljonen, A. et al. Hyperglycemia and lower diet quality in pregnant overweight women and increased infant size at birth and at 13 months of age--STEPS study. Early Hum Dev, 2013, 89: 439-44. PMID:23375946.	Study design
191	Maresh, M, Alderson, C, Beard, R, et al. Comparison of insulin against diet treatment in the management of abnormal carbohydrate tolerance in pregnancy. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Rco; 1983, 1983, : 255-67	Independent variable, not peer reviewed
192	Mariscal-Arcas, M., Rivas, A., Monteagudo, C. et al. Proposal of a Mediterranean diet index for pregnant women. Br J Nutr, 2009, 102: 744-9. PMID:19243664.	Dependent variable
193	Markovic, T. P., Muirhead, R., Overs, S. et al. Randomized Controlled Trial Investigating the Effects of a Low-Glycemic Index Diet on Pregnancy Outcomes in Women at High Risk of Gestational Diabetes Mellitus: The GI Baby 3 Study. Diabetes Care, 2016, 39: 31-8. PMID:26185283.	Independent variable
194	Marshall, J. Infant feeding: 8. Breastfeeding premature babies. Pract Midwife, 2013, 16. PMID:23789255.	Dependent variable
195	Martin, C. L., Siega-Riz, A. M., Sotres-Alvarez, D. et al. Maternal Dietary Patterns are Associated with Lower Levels of Cardiometabolic Markers during Pregnancy. Paediatr Perinat Epidemiol, 2016, 30: 246-55. PMID:26848932.	Study design
196	Maten, Gd, Hammen, Rm, Visman, L et al. Effects of a sodium restricted diet during pregnancy on maternal blood pressure and zinc status. J Perinat Med, 1992, 20	Independent variable

	Excluded Citations	Reasons for Exclusion
197	Mathews, F., Yudkin, P., Neil, A. Influence of maternal nutrition on outcome of pregnancy: prospective cohort study. <i>Bmj</i> , 1999, 319: 339-43. PMID:10435950.	Independent variable
198	Mathewson, M. Women diagnosed with pregnancy-induced hypertension (pre-eclampsia) should be placed on sodium restricted diets. <i>Crit Care Nurse</i> , 1983, 3. PMID:6552952.	Study design
199	McFadyen, A. Intervention in mothers with eating disorders and their babies (controlled trial). <i>National Research Register</i> , 2000,	Not peer-reviewed
200	McGowan, C. A., Walsh, J. M., Byrne, J. et al. The influence of a low glycemic index dietary intervention on maternal dietary intake, glycemic index and gestational weight gain during pregnancy: a randomized controlled trial. <i>Nutr J</i> , 2013, 12. PMID:24175958.	Independent variable
201	McGuire, Mk, Burgert, SI, Milner, Ja et al. Selenium status of infants is influenced by supplementation of formula or maternal diets. <i>American Journal of Clinical Nutrition</i> , 1993, 58: 643-8	Independent variable
202	Meinila, J., Koivusalo, S. B., Valkama, A. et al. Nutrient intake of pregnant women at high risk of gestational diabetes. <i>Food Nutr Res</i> , 2015, 59. PMID:25994096.	Dependent variable
203	Meinila, J., Valkama, A., Koivusalo, S. B. et al. Healthy Food Intake Index (HFII) - Validity and reproducibility in a gestational-diabetes-risk population. <i>BMC Public Health</i> , 2016, 16. PMID:27475905.	Dependent variable
204	Meltzer, H. M., Brantsaeter, A. L., Nilsen, R. M. et al. Effect of dietary factors in pregnancy on risk of pregnancy complications: results from the Norwegian Mother and Child Cohort Study. <i>Am J Clin Nutr</i> , 2011, 94. PMID:21543541.	Study design
205	Mendelson, R., Dollard, D., Hall, P. et al. The impact of the Healthiest Babies Possible Program on maternal diet and pregnancy outcome in underweight and overweight clients. <i>J Can Diet Assoc</i> , 1991, 52: 229-34. PMID:10116012.	Independent variable

	Excluded Citations	Reasons for Exclusion
206	Mendez, M. A., Plana, E., Guxens, M. et al. Seafood consumption in pregnancy and infant size at birth: results from a prospective Spanish cohort. J Epidemiol Community Health, 2010, 64: 216-22. PMID:19710045.	Independent variable
207	Mestman, J. H. Outcome of diabetes screening in pregnancy and perinatal morbidity in infants of mothers with mild impairment in glucose tolerance. Diabetes Care, 1980, 3: 447-52. PMID:7389561.	Independent variable
208	Mikkelsen, T. B., Osler, M., Orozova-Bekkevold, I. et al. Association between fruit and vegetable consumption and birth weight: a prospective study among 43,585 Danish women. Scand J Public Health, 2006, 34: 616-22. PMID:17132595.	Independent variable
209	Mikode, M. S., White, A. A. Dietary assessment of middle-income pregnant women during the first, second, and third trimesters. J Am Diet Assoc, 1994, 94: 196-9. PMID:8300999.	Independent variable
210	Misra, A., Ray, S., Patrikar, S. A longitudinal study to determine association of various maternal factors with neonatal birth weight at a tertiary care hospital. Med J Armed Forces India, 2015, 71: 270-3. PMID:26288495.	Country
211	Mitchell, J., Mackerras, D. The traditional humoral food habits of pregnant Vietnamese-Australian women and their effect on birth weight. Aust J Public Health, 1995, 19: 629-33. PMID:8616205.	Independent variable
212	Mohanty, A. F., Thompson, M. L., Burbacher, T. M. et al. Periconceptional Seafood Intake and Fetal Growth. Paediatr Perinat Epidemiol, 2015, 29: 376-87. PMID:26147526.	Independent variable
213	Moldenhauer, J, Guo, S, Liang, R et al. Dietary intake levels of the antioxidants vitamin c and vitamin e are adequately achieved with standard prenatal vitamin supplementation in high risk pregnancy groups [abstract]. Am J Obstet Gynecol, 2002, 187	Not peer-reviewed
214	Moore, V. M., Davies, M. J., Willson, K. J. et al. Dietary composition of pregnant women is related to size of the baby at birth. J Nutr, 2004, 134: 1820-6. PMID:15226475.	Independent variable

	Excluded Citations	Reasons for Exclusion
215	Morley, R, Lucas, A. Randomised diet in the neonatal period and growth performance until 7.5-8 y of age in preterm children. American Journal of Clinical Nutrition, 2000, 71: 822-8	Dependent variable
216	Morley, R., Lucas, A. Early diet and outcome in prematurely born. Clinical Nutrition, 1993, 12: 6-11	Independent variable, health status
217	Morrison, Ra, Brien, Pms, Micklewright, A. The effect of dietary supplementation with linoleic acid on the development of pregnancy induced hypertension. 4th World Congress of the International Society for the Study of Hypertension in Pregnancy;1984 June 18-21; Amsterdam, the Neth, 1984,	Not peer-reviewed
218	Morrison, Ra, Brien, Pms. The effect of dietary supplementation with prostaglandin precursors in pregnancy induced hypertension (PIH). 5th International Congress of the International Society for the Study of Hypertension in Pregnancy; 1986 7-10 July, Nottingham,, 1986,	Not peer-reviewed
219	Morton, N. E., Gulbrandsen, C. L., Rao, D. C. et al. Determinants of blood pressure in Japanese-American Families. Hum Genet, 1980, 53: 261-6. PMID:7358393.	Independent variable, health status
220	Moses, R. G., Casey, S. A., Quinn, E. G. et al. Pregnancy and Glycemic Index Outcomes study: effects of low glycemic index compared with conventional dietary advice on selected pregnancy outcomes. Am J Clin Nutr, 2014, 99: 517-23. PMID:24351875.	Independent variable
221	Moses, R. G., Luebcke, M., Davis, W. S. et al. Effect of a low-glycemic-index diet during pregnancy on obstetric outcomes. Am J Clin Nutr, 2006, 84: 807-12. PMID:17023707.	Independent variable
222	Moses, R. G., Luebke, M., Petocz, P. et al. Maternal diet and infant size 2 y after the completion of a study of a low-glycemic-index diet in pregnancy [5]. American Journal of Clinical Nutrition, 2007, 86	Duplicate
223	Moses, Rg, Luebke, M, Petocz, P et al. Maternal diet and infant size 2 y after the completion of a study of a low-glycemic-index diet in pregnancy. American Journal of Clinical Nutrition, 2007, 86	Dependent variable

	Excluded Citations	Reasons for Exclusion
224	Moss, J. L., Harris, K. M. Impact of maternal and paternal preconception health on birth outcomes using prospective couples' data in Add Health. Arch Gynecol Obstet, 2015, 291: 287-98. PMID:25367598.	Independent variable
225	Mullaney, Laura, Brennan, Aisling, Cawley, Shona et al. Relationship between fasting plasma glucose levels and maternal food group and macronutrient intakes in pregnancy. Dietetics, 2016, 73: 441-447	Independent variable
226	Munson, M., Saatkamp, R., West, C. Late preterm infants: steps to success. Neonatal Netw, 2011, 30: 267-70. PMID:21729860.	Dependent variable
227	Musaiger, A. O. Food habits of mothers and children in two regions of Oman. Nutr Health, 1996, 11: 29-48. PMID:8817582.	Independent variable, study design
228	Musselman, J. R., Jurek, A. M., Johnson, K. J. et al. Maternal dietary patterns during early pregnancy and the odds of childhood germ cell tumors: A Children's Oncology Group study. Am J Epidemiol, 2011, 173: 282-91. PMID:21098631.	Dependent variable
229	Myhre, R., Brantsaeter, A. L., Myking, S. et al. Intakes of garlic and dried fruits are associated with lower risk of spontaneous preterm delivery. J Nutr, 2013, 143: 1100-8. PMID:23700347.	Independent variable
230	Newman, Ak, Deussen, Ar, Moran, Lj et al. The effect of antenatal dietary and lifestyle advice on maternal psychological health in women who are overweight or obese-findings from the limit randomised trial. Journal of Paediatrics and Child Health [abstracts of the 17th Congress of the Perinatal Society of Australia and New Zealand, , 2013, 49	Not peer-reviewed
231	Ney, D., Hollingsworth, D. R., Cousins, L. Decreased insulin requirement and improved control of diabetes in pregnant women given a high-carbohydrate, high-fiber, low-fat diet. Diabetes Care, 1982, 5: 529-33. PMID:6329613.	Independent variable, health status
232	Nicholls, M. G. Reduction of dietary sodium in Western Society. Benefit or risk?. Hypertension, 1984, 6: 795-801. PMID:6394485.	Study design

	Excluded Citations	Reasons for Exclusion
233	Niedhammer, I., Murrin, C., O'Mahony, D. et al. Explanations for social inequalities in preterm delivery in the prospective Lifeways cohort in the Republic of Ireland. Eur J Public Health, 2012, 22: 533-8. PMID:21746747.	Independent variable
234	Odent, M. Land food .. sea food .. brain food. Midwifery Today Childbirth Educ, 1996, : 18-20. PMID:9016057.	Study design
235	Olafsdottir, A. S., Skuladottir, G. V., Thorsdottir, I. et al. Maternal diet in early and late pregnancy in relation to weight gain. Int J Obes (Lond), 2006, 30: 492-9. PMID:16331301.	Independent variable
236	Olsen, S. F., Beck, D. N., Kollslid, R. et al. High birth weights in prewar Faroe Islands. J Epidemiol Community Health, 2001, 55. PMID:11160178.	Independent variable
237	Olsen, S. F., Grandjean, P., Weihe, P. et al. Frequency of seafood intake in pregnancy as a determinant of birth weight: evidence for a dose dependent relationship. J Epidemiol Community Health, 1993, 47: 436-40. PMID:8120495.	Independent variable
238	Olsen, S. F., Secher, N. J. Low consumption of seafood in early pregnancy as a risk factor for preterm delivery: prospective cohort study. Bmj, 2002, 324. PMID:11859044.	Independent variable
239	Paisey, R. B., Hartog, M., Savage, P. A high-fibre diet in gestational diabetes--wheat fibre, leguminous fibre or both?. Hum Nutr Appl Nutr, 1987, 41: 146-9. PMID:3032872.	Study design
240	Papadopoulou, E., Kogevinas, M., Botsivali, M. et al. Maternal diet, prenatal exposure to dioxin-like compounds and birth outcomes in a European prospective mother-child study (NewGeneris). Sci Total Environ, 2014, 484: 121-8. PMID:24691212.	Study design
241	Papazian, T., Hout, H., Sibai, D. et al. Development, reproducibility and validity of a food frequency questionnaire among pregnant women adherent to the Mediterranean dietary pattern. Clinical Nutrition, 2016, 35: 1550-1556	Dependent variable

	Excluded Citations	Reasons for Exclusion
242	Pedersen, M., von Stedingk, H., Botsivali, M. et al. Birth weight, head circumference, and prenatal exposure to acrylamide from maternal diet: the European prospective mother-child study (NewGeneris). Environ Health Perspect, 2012, 120: 1739-45. PMID:23092936.	Study design
243	Pentieva, K., Petrova, S., Ovcharova, D. et al. Influence of some sociodemographic factors and smoking on the risk for intrauterine growth retardation. Khigiena i Zdraveopazvane, 1996, 39: 5-8	Language
244	Perez-Ferre, N., Fernandez, D., Torrejon, M. J. et al. Effect of lifestyle on the risk of gestational diabetes and obstetric outcomes in immigrant Hispanic women living in Spain. J Diabetes, 2012, 4: 432-8. PMID:22742428.	Health status
245	Persson, B, Stangenberg, M, Hansson, U et al. Gestational diabetes mellitus (GDM): comparative evaluation of two treatment regimens, diet vs insulin and diet. Diabetes, 1985, 34: 101-5	Independent variable
246	Petrella, E., Malavolti, M., Bertarini, V. et al. Gestational weight gain in overweight and obese women enrolled in a healthy lifestyle and eating habits program. J Matern Fetal Neonatal Med, 2014, 27: 1348-52. PMID:24175912.	Independent variable
247	Petridou, E., Stoikidou, M., Diamantopoulou, M. et al. Diet during pregnancy in relation to birthweight in healthy singletons. Child Care Health Dev, 1998, 24: 229-42. PMID:9618037.	Independent variable, study design
248	Phelan, S., Hart, C., Phipps, M. et al. Maternal behaviors during pregnancy impact offspring obesity risk. Exp Diabetes Res, 2011, 2011. PMID:22110475.	Independent variable
249	Picaud, Jc, Lapillonne, A, Boucher, P et al. Dietary cholesterol does not affect vitamin D metabolism in preterm infants : preliminary results. Pediatr Res, 1999, 45	Dependent variable

	Excluded Citations	Reasons for Exclusion
250	Picone, T. A., Allen, L. H., Olsen, P. N. et al. Pregnancy outcome in North American women. II. Effects of diet, cigarette smoking, stress, and weight gain on placentas, and on neonatal physical and behavioral characteristics. <i>Am J Clin Nutr</i> , 1982, 36: 1214-24. PMID:7148740.	Independent variable
251	Pinto, E., Barros, H., dos Santos Silva, I. Dietary intake and nutritional adequacy prior to conception and during pregnancy: a follow-up study in the north of Portugal. <i>Public Health Nutr</i> , 2009, 12: 922-31. PMID:18752697.	Independent variable, dependent variable
252	Piraquive, J, Grieve, P, Sudha, K et al. Quality of Diet and Central Nervous System Activity in Low Birth Weight Infants. <i>Pediatric Academic Societies Annual Meeting</i> , 2013,	Independent variable
253	Popeski, D., Ebbeling, L. R., Brown, P. B. et al. Blood pressure during pregnancy in Canadian Inuit: community differences related to diet. <i>Cmaj</i> , 1991, 145: 445-54. PMID:1878826.	Independent variable
254	Qiu, C., Coughlin, K. B., Frederick, I. O. et al. Dietary fiber intake in early pregnancy and risk of subsequent preeclampsia. <i>Am J Hypertens</i> , 2008, 21: 903-9. PMID:18636070.	Independent variable
255	Qiu, C., Zhang, C., Gelaye, B. et al. Gestational diabetes mellitus in relation to maternal dietary heme iron and nonheme iron intake. <i>Diabetes Care</i> , 2011, 34: 1564-9. PMID:21709295.	Independent variable
256	Radder, J. K., Terpstra, J. Comparison of postprandial (lunch tolerance) and postglucose (oral glucose tolerance) blood sugar values in pregnancy. <i>Eur J Obstet Gynecol Reprod Biol</i> , 1980, 10: 163-71. PMID:7189481.	Independent variable
257	Raman, L. Influence of maternal nutritional factors affecting birthweight. <i>Am J Clin Nutr</i> , 1981, 34: 775-83. PMID:7223693.	Country
258	Ramon, R., Ballester, F., Aguinagalde, X. et al. Fish consumption during pregnancy, prenatal mercury exposure, and anthropometric measures at birth in a prospective mother-infant cohort study in Spain. <i>Am J Clin Nutr</i> , 2009, 90: 1047-55. PMID:19710189.	Independent variable

	Excluded Citations	Reasons for Exclusion
259	Ramon, R., Ballester, F., Iniguez, C. et al. Vegetable but not fruit intake during pregnancy is associated with newborn anthropometric measures. <i>J Nutr</i> , 2009, 139: 561-7. PMID:19158218.	Independent variable
260	Ramos-Leví, A. M., Páez-Ferre, N., Fernández, M. D. et al. Risk factors for gestational diabetes mellitus in a large population of women living in Spain: Implications for preventative strategies. <i>International Journal of Endocrinology</i> , 2012, 2012	Independent variable, study design
261	Ray, J. G., Mamdani, M. M. Association between folic acid food fortification and hypertension or preeclampsia in pregnancy. <i>Arch Intern Med</i> , 2002, 162: 1776-7. PMID:12153382.	Independent variable
262	Reddy, S., Sanders, T. A., Obeid, O. The influence of maternal vegetarian diet on essential fatty acid status of the newborn. <i>Eur J Clin Nutr</i> , 1994, 48: 358-68. PMID:8055852.	Independent variable
263	Reece, Ea, Gay, L, DeGennaro, N et al. A randomized clinical trial of a fiber-enriched diabetic diet vs the standard American Diabetes Association recommended diet in the management of diabetes mellitus in pregnancy. <i>Proceedings of 10th Annual Meeting of Society of Perinatal Obstetricians</i> ; 1990 Jan 23-27; Houston, Texas, USA, 1990,	Not peer-reviewed
264	Renzaho, A. M., Skouteris, H., Oldroyd, J. Preventing gestational diabetes mellitus among migrant women and reducing obesity and type 2 diabetes in their offspring: a call for culturally competent lifestyle interventions in pregnancy. <i>J Am Diet Assoc</i> , 2010, 110: 1814-7. PMID:21111090.	Study design
265	Rhodes, E. T., Pawlak, D. B., Takoudes, T. C. et al. Effects of a low-glycemic load diet in overweight and obese pregnant women: a pilot randomized controlled trial. <i>Am J Clin Nutr</i> , 2010, 92: 1306-15. PMID:20962162.	Independent variable
266	Ribeiro, M. D. Diet and pregnancy toxemia: new thoughts on an old problem. <i>Public Health Rev</i> , 1982, 10: 149-67. PMID:7167640.	Study design

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268	Ross, Ra, Perlzweig, Wa, Taylor, Hm et al. A study of certain dietary factors of possible etiologic significance in toxemias of pregnancy. Am J Obstet Gynecol, 1938, 35: 426-40	Date
269	Ruiz-Gracia, T., Duran, A., Fuentes, M. et al. Lifestyle patterns in early pregnancy linked to gestational diabetes mellitus diagnoses when using IADPSG criteria. The St Carlos gestational study. Clin Nutr, 2016, 35: 699-705. PMID:25998584.	Independent variable
270	Rush, D., Stein, Z., Susser, M. Diet in pregnancy: a randomized controlled trial of nutritional supplements. Birth Defects Orig Artic Ser, 1980, 16. PMID:7000197.	Independent variable
271	Saldana, T. M., Siega-Riz, A. M., Adair, L. S. Effect of macronutrient intake on the development of glucose intolerance during pregnancy. Am J Clin Nutr, 2004, 79: 479-86. PMID:14985225.	Independent variable
272	Sanders, T. A., Reddy, S. The influence of a vegetarian diet on the fatty acid composition of human milk and the essential fatty acid status of the infant. J Pediatr, 1992, 120. PMID:1560329.	Dependent variable
273	Sauder, K. A., Starling, A. P., Shapiro, A. L. et al. Diet, physical activity and mental health status are associated with dysglycaemia in pregnancy: the Healthy Start Study. Diabet Med, 2016, 33: 663-7. PMID:26872289.	Study design
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276	Savard, N., Levallois, P., Rivest, L. P. et al. Impact of individual and ecological characteristics on small for gestational age births: an observational study in Quebec. <i>Chronic Dis Inj Can</i> , 2014, 34: 46-54. PMID:24618381.	Independent variable
277	Schneck, M. E., Sideras, K. S., Fox, R. A. et al. Low-income pregnant adolescents and their infants: dietary findings and health outcomes. <i>J Am Diet Assoc</i> , 1990, 90: 555-8. PMID:2319076.	Independent variable
278	Scott, F. W., Kolb, H. Dietary intervention for diabetes prevention in the neonate. <i>Diabetes Metab Rev</i> , 1998, 14. PMID:9605633.	Study design
279	Seely, E. W., Maxwell, C. Cardiology patient page. Chronic hypertension in pregnancy. <i>Circulation</i> , 2007, 115. PMID:17309919.	Independent variable, study design
280	Sen, S., Rifas-Shiman, S. L., Shivappa, N. et al. Dietary Inflammatory Potential during Pregnancy Is Associated with Lower Fetal Growth and Breastfeeding Failure: Results from Project Viva. <i>J Nutr</i> , 2016, 146: 728-36. PMID:26936137.	Independent variable
281	Shin, D., Lee, K. W., Song, W. O. Dietary Patterns during Pregnancy Are Associated with Risk of Gestational Diabetes Mellitus. <i>Nutrients</i> , 2015, 7: 9369-82. PMID:26569302.	Study design
282	Siega-Riz, A. M., Herrmann, T. S., Savitz, D. A. et al. Frequency of eating during pregnancy and its effect on preterm delivery. <i>Am J Epidemiol</i> , 2001, 153: 647-52. PMID:11282791.	Independent variable
283	Siega-Riz, A. M., Savitz, D. A., Zeisel, S. H. et al. Second trimester folate status and preterm birth. <i>Am J Obstet Gynecol</i> , 2004, 191: 1851-7. PMID:15592264.	Independent variable

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285	Sister, MorningStar. Sick pregnancies. Midwifery Today Int Midwife, 2014, : 12-5. PMID:25980101.	Study design, non peer-reviewed
286	Smeeth, L., Williams, D. Can a dietary supplement prevent pre-eclampsia? L-arginine with vitamins show promise, but there are good grounds for caution. Bmj, 2011, 342	Independent variable
287	Smith, L. K., Draper, E. S., Evans, T. A. et al. Associations between late and moderately preterm birth and smoking, alcohol, drug use and diet: a population-based case-cohort study. Arch Dis Child Fetal Neonatal Ed, 2015, 100. PMID:25972442.	Study design
288	Smith, V. M. Preterm infant nutrition. Midwives Chron, 1989, 102: 143-6. PMID:2725350.	Study design
289	Sokup, A., Mioduszewska, M., Bałšćk, A. et al. Unhealthy eating habits precede gestational diabetes mellitus in Polish women Part I: Evaluation of frequency, regularity of consumed meals and consumed snacks, bread, sweets, fruit and vegetables. Eating habits and gestational diabetes. Diabetologia Doswiadczalna i Kliniczna, 2010, 10: 17-22	Independent variable, health status
290	Soto, R., Guilloty, N., Anzalota, L. et al. Association between maternal diet factors and hemoglobin levels, glucose tolerance, blood pressure and gestational age in a Hispanic population. Arch Latinoam Nutr, 2015, 65: 86-96. PMID:26817380.	Independent variable
291	Souza, Lalitha, Jayaweera, Hiranthi, Pickett, Kate E. Pregnancy diets, migration, and birth outcomes. Health Care Women Int, 2016, 37: 964-978	Study design
292	Sparks, J. W. Fetal growth and diet. Mead Johnson Symp Perinat Dev Med, 1984, : 21-7. PMID:6545381.	Study design
293	Standards of care of diabetes mellitus in pregnancy. Diabetologie Metabolismus Endokrinologie Vyziva, 2007, 10: 229-231	Study design, language

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295	Steegers, E. A. P., Van Lakwijk, H. P. J. M., Jongsma, H. W. et al. (Patho)physiological implications of chronic dietary sodium restriction during pregnancy; a longitudinal prospective randomized study. Br J Obstet Gynaecol, 1991, 98: 980-987	Duplicate
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298	Stein, A. The influence of maternal eating disorder on infant development: an intervention study. ControlledTrials.com [http://www.controlled-trials.com/ISRCTN95026274], 2004,	Independent variable, not peer reviewed
299	Stephens, T. V., Woo, H., Innis, S. M. et al. Healthy pregnant women in Canada are consuming more dietary protein at 16- and 36-week gestation than currently recommended by the Dietary Reference Intakes, primarily from dairy food sources. Nutr Res, 2014, 34: 569-76. PMID:25150115.	Independent variable
300	Stuckey-Schrock, K., Schrock, S. D. Head off complications in late preterm infants. J Fam Pract, 2013, 62. PMID:23570036.	Independent variable, study design
301	Suhail, M., Suhail, M. F., Khan, H. Role of vitamins C and E in regulating antioxidant and pro-oxidant markers in preeclampsia. Journal of Clinical Biochemistry and Nutrition, 2008, 43: 210-220	Country
302	Svenningsen, Nw, Lindquist, B. Incidence of metabolic acidosis in term, preterm and small for gestational age infants in relation to dietary protein intake. Acta Paediatr Scand, 1973, 62: 1-10	Date

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303	Switkowski, K. M., Jacques, P. F., Must, A. et al. Maternal protein intake during pregnancy and linear growth in the offspring. <i>Am J Clin Nutr</i> , 2016, 104: 1128-1136. PMID:27581477.	Independent variable
304	Symonds, M. E., Budge, H., Edwards, L. J. et al. Maternal nutrition, cortisol and programming of fetal development. <i>Perinatology</i> , 2002, 4: 67-74	No full text
305	Tande, D. L., Ralph, J. L., Johnson, L. K. et al. First trimester dietary intake, biochemical measures, and subsequent gestational hypertension among nulliparous women. <i>J Midwifery Womens Health</i> , 2013, 58: 423-30. PMID:23895215.	Independent variable
306	Tanha, F. D., Mohseni, M., Ghajarzadeh, M. et al. The effects of healthy diet in pregnancy. <i>Journal of Family and Reproductive Health</i> , 2013, 7: 121-125	Independent variable, dependent variable
307	Taylor, C. M., Golding, J., Emond, A. M. Blood mercury levels and fish consumption in pregnancy: Risks and benefits for birth outcomes in a prospective observational birth cohort. <i>Int J Hyg Environ Health</i> , 2016, 219: 513-20. PMID:27252152.	Independent variable
308	Thacker, S. M., Petkewicz, K. A. Gestational diabetes mellitus. <i>U.S. Pharm.</i> , 2009, 34: 43-48	Study design
309	Thomas, B., Ghebremeskel, K., Lowy, C. et al. Nutrient intake of women with and without gestational diabetes with a specific focus on fatty acids. <i>Nutrition</i> , 2006, 22: 230-6. PMID:16500549.	Independent variable, study design
310	Thomas, D. M., Clapp, J. F., Shernce, S. A foetal energy balance equation based on maternal exercise and diet. <i>J R Soc Interface</i> , 2008, 5: 449-55. PMID:17895222.	Independent variable
311	Thompson, J. M., Wall, C., Becroft, D. M. et al. Maternal dietary patterns in pregnancy and the association with small-for-gestational-age infants. <i>Br J Nutr</i> , 2010, 103: 1665-73. PMID:20211035.	Study design
312	Tielemans, M. J., Erler, N. S., Leermakers, E. T. M. et al. A Priori and a Posteriori dietary patterns during pregnancy and gestational weight gain: The generation R study. <i>Nutrients</i> , 2015, 7: 9383-9399	Dependent variable

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313	Tobias, D. K., Zhang, C., Chavarro, J. et al. Healthful dietary patterns and long-term weight change among women with a history of gestational diabetes mellitus. <i>Int J Obes (Lond)</i> , 2016, 40: 1748-1753. PMID:27569683.	Dependent variable
314	Tovar, A., Must, A., Bermudez, O. I. et al. The impact of gestational weight gain and diet on abnormal glucose tolerance during pregnancy in Hispanic women. <i>Matern Child Health J</i> , 2009, 13: 520-30. PMID:18597166.	Independent variable
315	Uusitalo, U., Arkkola, T., Ovaskainen, M. L. et al. Unhealthy dietary patterns are associated with weight gain during pregnancy among Finnish women. <i>Public Health Nutr</i> , 2009, 12: 2392-9. PMID:19323867.	Dependent variable
316	Valentini, R., Dalfra, M. G., Masin, M. et al. A pilot study on dietary approaches in multiethnicity: two methods compared. <i>Int J Endocrinol</i> , 2012, 2012. PMID:22505892.	Health status
317	Van Buul, B. J. A., Steegers, E. A. P., Van Der Maten, G. D. et al. Dietary sodium restriction does not prevent gestational hypertension: A Dutch two-center randomized trial. <i>Hypertension in Pregnancy</i> , 1997, 16: 335-346	Independent variable
318	van Buul, B. J., Steegers, E. A., Jongsma, H. W. et al. Dietary sodium restriction in the prophylaxis of hypertensive disorders of pregnancy: effects on the intake of other nutrients. <i>Am J Clin Nutr</i> , 1995, 62: 49-57. PMID:7598066.	Independent variable
319	van der Maten, G. D. Low sodium diet in pregnancy: effects on maternal nutritional status. <i>Eur J Obstet Gynecol Reprod Biol</i> , 1995, 61: 63-4. PMID:8549849.	Independent variable
320	van der Maten, G. D., van Raaij, J. M., Visman, L. et al. Low-sodium diet in pregnancy: effects on blood pressure and maternal nutritional status. <i>Br J Nutr</i> , 1997, 77: 703-20. PMID:9175991.	Independent variable

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321	Vejrup, K., Brantsaeter, A. L., Knutsen, H. K. et al. Prenatal mercury exposure and infant birth weight in the Norwegian Mother and Child Cohort Study. Public Health Nutr, 2014, 17: 2071-80. PMID:24103413.	Independent variable
322	Vilela, A. A., Pinto Tde, J., Rebelo, F. et al. Association of Prepregnancy Dietary Patterns and Anxiety Symptoms from Midpregnancy to Early Postpartum in a Prospective Cohort of Brazilian Women. J Acad Nutr Diet, 2015, 115: 1626-35. PMID:25769749.	Dependent variable
323	Vitolo, Mr, Fraga, Bueno Ms, Mendes, Gama C. Impact of a dietary counseling program on the gain weight speed of pregnant women attended in a primary care service. Revista Brasileira de Ginecologia e Obstetricia, 2011, 33: 13-19	Language
324	Wakimoto, Patricia, Akabike, Andrea, King, Janet C. Maternal Nutrition and Pregnancy Outcome—A Look Back. Nutrition Today, 2015, 50: 221-229	Study design, non peer-reviewed
325	Walsh, J. M., Mahony, R. M., Culliton, M. et al. Impact of a low glycemic index diet in pregnancy on markers of maternal and fetal metabolism and inflammation. Reprod Sci, 2014, 21: 1378-81. PMID:24642719.	Dependent variable
326	Walsh, J. M., McGowan, C. A., Mahony, R. et al. Low glycaemic index diet in pregnancy to prevent macrosomia (ROLO study): randomised control trial. Bmj, 2012, 345. PMID:22936795.	Independent variable
327	Wang, C., Zhu, W., Wei, Y. et al. Exercise intervention during pregnancy can be used to manage weight gain and improve pregnancy outcomes in women with gestational diabetes mellitus. BMC Pregnancy Childbirth, 2015, 15. PMID:26459271.	Independent variable
328	Weed, S. S. Preeclampsia. Midwifery Today Int Midwife, 2014, : 22-3. PMID:25980104.	Study design

	Excluded Citations	Reasons for Exclusion
329	Wen, L. M., Simpson, J. M., Rissel, C. et al. Maternal junk food diet during pregnancy as a predictor of high birthweight: findings from the healthy beginnings trial. <i>Birth</i> , 2013, 40: 46-51. PMID:24635424.	Independent variable
330	Wheeler, S. J., Poston, L., Thomas, J. E. et al. Maternal plasma fatty acid composition and pregnancy outcome in adolescents. <i>Br J Nutr</i> , 2011, 105: 601-10. PMID:21269546.	Independent variable
331	Widga, A. C., Lewis, N. M. Defined, in-home, prenatal nutrition intervention for low-income women. <i>J Am Diet Assoc</i> , 1999, 99. PMID:10491673.	Independent variable
332	Williams, C., Highley, W., Ma, E. H. et al. Protein, amino acid, and caloric intakes of selected pregnant women. <i>J Am Diet Assoc</i> , 1981, 78: 28-35. PMID:7217557.	Independent variable
333	Williams, E. J. Gestational diabetes mellitus and diet control. <i>Diabetes Educ</i> , 1986, 12: 16-7. PMID:3633805.	Study design
334	Wolff, C. B., Wolff, H. K. Maternal eating patterns and birth weight of Mexican American infants. <i>Nutr Health</i> , 1995, 10: 121-34. PMID:7491165.	Study design
335	Wood, J. Diet for diabetics: fact vs. hypothesis. <i>Compr Ther</i> , 1980, 6: 56-61. PMID:7408433.	Study design
336	Wynn, A. H., Crawford, M. A., Doyle, W. et al. Nutrition of women in anticipation of pregnancy. <i>Nutr Health</i> , 1991, 7: 69-88. PMID:2038457.	Independent variable
337	Zielinsky, P., Piccoli, Vian, I. et al. Maternal restriction of polyphenols and fetal ductal dynamics in normal pregnancy: an open clinical trial. <i>Arq Bras Cardiol</i> , 2013, 101: 217-25. PMID:23949325.	Independent variable